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Lead Compounds *and* Magnesia[1]

Mineral Accelerators of Vulcanization, Their Specification, Characteristics, Relative Values and Application

WEBSTER NORRIS

MINERAL accelerators of vulcanization include a group of basic lead compounds, hydrated lime and magnesia. All of these materials were as vitally important to the rubber industry as sulphur before the discovery and development of organic accelerators. In fact, the importance of white lead and litharge was well-known to Charles Goodyear who wrote as follows[2] concerning them:

"Oxides of the metals are used in the manufacture (of rubber); among these white lead and litharge are commonly preferred. From 2 to 4 ounces of either of these metals to the pound of gum cause the articles, and particularly those that are thick or massive, to be more readily changed or vulcanized, and more completely or with greater uniformity."

The proportions named by Goodyear are equivalent to 12.5 to 25 per cent litharge on the rubber content. This range is considerably higher than that used at the present time because much less dependence is placed now, than formerly, upon litharge as an accelerator of vulcanization. Litharge, for example, served a vital purpose in the proper curing of rubber footwear and clothing. These goods were formerly and for generations cured in hot air chambers at atmospheric pressure.

Lime as an accelerator of vulcanization was employed chiefly in mechanical rubber goods and rarely found a place in dry heat curing because of its tendency to make the goods perish rapidly.

Magnesia seems to have been introduced from Germany into American rubber manufacturing practice for expediting the cure of white rubber and to further stimulate the results obtainable by the use of litharge alone. It was a valuable and successful acquisition to the rubber industry and still retains considerable, though decreasing, importance to the compounder.

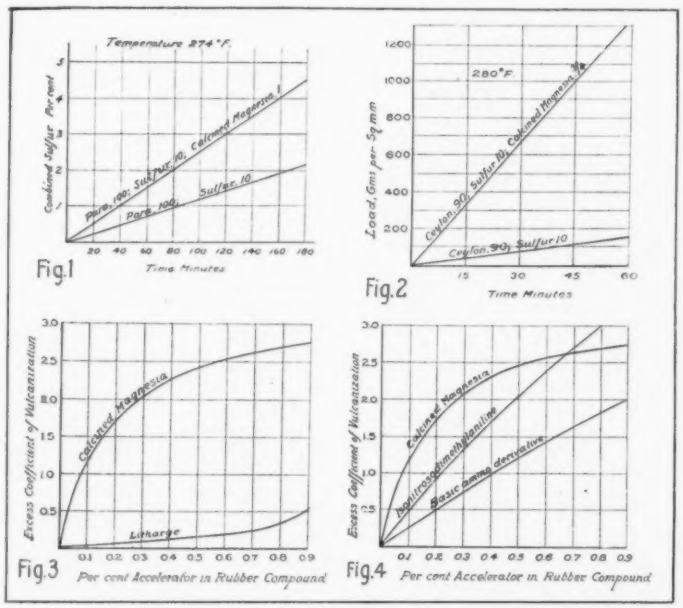


Fig. 1—Chemical effect of sulphur and magnesia. Fig. 2—Physical effect of sulphur and magnesia. Fig. 3—Accelerating effect of litharge and magnesia. Fig. 4—Accelerating effect of magnesia and certain organic accelerators.

Litharge

Litharge or lead monoxide for rubber is produced from standard brands of American refined pig lead, the copper content of which ranges from 0.0003 to 0.0006 per cent. In the litharge produced this corresponds to not over 0.001 per cent of copper and that proportion is set as a maximum allowable limit.

The presence of manganese is practically as objectionable in rubber as copper and for the same reason. Its proportion is, therefore, also limited to 0.001 per cent. It is perfectly feasible to get litharge virtually copper free and none other should be tolerated in rubber work.

The rubber compounder should not fail to gain full appreciation of the destruction that

[1] Copyright, 1928, by Webster Norris. Continued from INDIA RUBBER WORLD, June 1, 1928, pp. 57-59.

[2] *Gum Elastic*, Vol. 1, 1853, p. 188.

copper can work upon rubber even in traces as minute as 0.001 per cent in finished goods.[3] Standard brands of American refined pig lead contain 0.0003 to 0.0006 per cent of copper. This corresponds to a maximum of 0.0005 per cent of copper in the litharge produced. Specific limitation of copper to 0.001 per cent is, therefore, reasonable for rubber makers' litharge.

Litharge Specification

The essential requirements in purity and fineness of litharge suitable for use in insulation and other high class rubber work is designated by the following specific limitations. Preference is given to yellow litharge, lead monoxide of the high degree of purity and fineness corresponding to the following analysis:

	Maximum Per Cent
Moisture	0.10
Loss at incipient fusion	0.20
Insoluble in 5% acetic acid	0.10
Copper	0.001
Manganese	0.001
Iron	0.01
Metallic lead	0.02
Residue on washing on a 200 mesh phosphor-bronze sieve	0.10

Commercial Grades

The color of litharge is no criterion of its purity. Light yellow color is due to rapid cooling of the material or to the presence of traces of antimony, arsenic, bismuth, etc. Red color is due to slow cooling. Commercially litharge has specific gravity of 9.28 and is designated according to the four main purposes for which it is prepared: these are rubber makers, oil refiners, battery makers, and color makers. All are made from standard pig lead and sold at the same price. The standard pig metal is furnaced in three classes of furnace and the product ground in different ways to meet the litharge requirements of the industries named above. Thus, rubber makers has the greatest degree of fineness and is free from the presence of copper and manganese; oil refiners closely resembles rubber makers' without the strict requirement of freedom from copper and manganese; battery makers is fairly close ground; color makers' is fine ground and regarded as a satisfactory substitute for rubber makers litharge.

Litharge has a multiplicity of industrial uses, other than in rubber work, for example, in the pottery and glass industries, the manufacture of glycerine and litharge cement, etc. It acts as an accelerator of the vulcanization of rubber apparently by bringing about a reaction with the rubber resins present. The heat thus engendered causes vulcanization to proceed more rapidly than in the presence of sulphur alone. In the vulcanization of soft resinous rubbers the presence of litharge in the mixing is particularly desirable. As an accelerator, litharge is only slightly more active than lime and magnesia, the latter being practically of equal value in that respect.

In combination with sulphur litharge forms lead sulphide, a compound of considerable degree of blackness. For this reason its presence is not permissible in white or light-colored rubber mixings.

Basic Carbonate White Lead

The paint pigment basic carbonate white lead was one of the essential compounding ingredients used by Charles Goodyear. In fact, his original patented "triple compound" comprised a mixture of rubber, sulphur and white lead.

Basic carbonate white lead consists of a mixture of carbonate and hydroxide of lead. Its composition is expressed by the formula, 2 Pb. CO_3 Pb $(OH)_2$. Its specific gravity is 6.46. The so-called Dutch process is the one most largely used for its manufacture. It is, however, exceedingly slow requiring three months for completion. In outline it consists in the slow corrosion of metallic lead by means of acetic acid and conversion of the material into hydrated carbonate of lead, with the regeneration of the acetic acid, by means of carbon dioxide gas.

The lead is cast into "buckles," which expose the maximum surface to corrosion. These buckles are placed in clay pots containing dilute acetic acid or vinegar. The pots are stacked in tiers and covered with tan bark. The carbon dioxide required for the ultimate conversion of the corroded lead is generated by the action of the fermenting bark. The buckles are not always corroded completely, therefore they are cleaned in tumbling barrels and the white lead ground, floated, dried and packed for shipment. There are quicker processes for making basic carbonate white lead in most of which atomized or powdered lead is used.

White Lead Specification

Complete detailed specifications[4] for basic carbonate white lead relates to the material for paint. Dry white lead suitable as a paint pigment is equally acceptable for rubber compounding. White lead is a very mild accelerator. It is made use of in rubber compounding, usually for some other reason, such as to toughen the finished article and to increase its specific gravity. Litharge is generally used with white lead. This combination is found in the solid tire stock included in the group of typical mixings containing lead compounds.

Basic Sulphate White Lead

Basic lead sulphate was introduced as a rubber compounding ingredient for mechanical rubber goods in 1902 under the name "Sublimed white lead."[5] This term is shortened in the industry to "Sub-lead." The material was popular 25 years ago and is now used in a limited way only. It is prepared by direct furnace treatment of the lead ore galenite, which is lead sulphide. Basic sulphate white lead contains both litharge and zinc oxide, not as a mixture but as a basic salt. Its specific gravity is 6.27. It is very fine and uniform in grain and is a somewhat cheaper product than basic carbonate white lead. The composition is approximately 75 per cent lead sulphate, 20 per cent lead oxide, and 5 per cent zinc oxide. Its composition is prescribed in the following specification[6].

BASIC SULPHATE WHITE LEAD

	Maximum Per cent	Minimum Per cent
Lead oxide	18.0	11.0
Zinc oxide	9.0	...
Total impurities, including moisture	1.0	...
The remainder shall be lead sulphate.		
Coarse particles retained on a No. 325 sieve, per cent	1.0	...

This material exerts less accelerating effect on the cure than litharge. It imparts smoothness to calendered rubber. Owing to its lower price and gravity it has an advantage over litharge in volume cost. In rubber mixings one part of litharge is used with two to three parts of basic lead sulphate.

Basic Sulphate Blue Lead

This lead pigment is made by direct furnace treatment of galenite or lead sulphide ore. It is used chiefly as paint

[3] *The Chemistry of Rubber Manufacture.* By Lothar E. Weber, 1926, pp. 361-363.
"Latex Contaminated with Copper Compounds as a Source of Fire." J. G. Fol and W. De Visser. INDIA RUBBER WORLD, May 1, 1928, pp. 71-72.
"Cloth Dyeing for Rubber Proofing." By H. L. Hockney and C. W. Bancroft, *J. Soc. Dyers & Colorists,* April, 1927, pp. 105-110.

[4] Bureau of Standards Circular No. 84, Dec. 27, 1919.

[5] Copyright by The Picher Lead Co., Joplin, Mo.

[6] A. S. T. M. Standard Specification for Basic Sulphate White Lead, D 82-24.

Typical Mixings Accelerated with Lead Compounds and Lime

TRIP HAMMER SPRING

Coarse Para	47.00
Sub. lead	**35.25**
Whiting	14.75
Sulphur	3.00
	100.00

Cure 45 minutes at 285° F.

BLOWING ENGINE VALVE

Fine Para	20.25
Coarse Para	20.25
Sub. lead	**15.25**
Barytes	25.25
Whiting	15.25
Fossil flour	1.25
Sulphur	2.50
	100.00

Cure 45 minutes at 285° F.

HARD VALVE

Coarse Para	20.0
Guayaquil	20.0
Fossil flour	7.5
Litharge	**5.00**
Plumbago	10.0
Bone black	12.5
Hard rubber dust	10.0
Lime	**2.5**
Sulphur	12.5
	100.0

Cure 60 minutes at 300° F.

TILING CEMENT

Smoked sheets	39.0
Sub lead	**39.0**
Lime	**19.0**
Sulphur	3.0
	100.0

Cure 30 minutes at 285° F.

SOLID CARRIAGE TIRE

Fine Para	37.25
XX zinc oxide	30.00
Litharge	**15.00**
Basic carbonate white lead	**15.00**
Sulphur	2.75
	100.00

Cure 45 minutes at 285° F.

and occasionally in rubber compounding. For the latter purpose it exerts some accelerating and toughening effect and increases rapidly the weight of rubber stocks. Its specific gravity is 6.40.

In composition blue lead is chiefly lead sulphate with some lead sulphide (Pb S), lead sulphite, (Pb SO_3) zinc oxide and a little carbon. Its blue color is due to the presence of the black lead sulphide and only slightly to the carbon content. The latter comes incidentally from the fuel used. Blue lead can be substituted for basic lead sulphate in rubber compounding.

This material exhibits wide variations in composition, ranging as indicated in the following analysis which shows that the material is technically lead sulphate with excess of lead oxide (Pb O) making it essentially a basic lead sulphate.

ANALYSIS OF "BLUE LEAD"

	Per Cent
Lead sulphate (Pb SO_4)	45 to 55
Lead oxide (Pb O)	30 to 40
Lead sulphide (Pb S)	5 to 8
Lead sulphite (Pb SO_3)	3 to 5
Zinc oxide (Zn O)	2 to 3
Carbon	less than 1

Red Lead

Red lead, minium or peroxide of lead consists entirely of oxides of lead made by roasting litharge or compounds of lead which yield litharge by heating. The material is not suited for general rubber compounding because of its rapidly destructive effect upon rubber by oxidation. The composition of dry red is indicated by the formula Pb_3O_4. It has been standardized technically by the American Society for Testing Materials[7].

Properties and Tests

The dry pigment shall consist entirely of oxides of lead, free from all adulterants and shall conform to the following requirements:

	85 Per Cent Grade	95 Per Cent Grade
True red lead, Pb_3O_4, minimum, per ct.	85.0	95.0
Total impurities, including moisture, soluble matter, water, and matter insoluble in a mixture of nitric acid and hydrogen peroxide, maximum per cent	1.0	1.0
The remainder shall be lead monoxide (Pb O) coarse particles retained on a No. 325 sieve, maximum per cent	2.0	2.0

[7]Standard Specification for Red Lead D 83-24, A. S. T. M. Standards, 1927.

Hyposulphite Black Lead

Lead hyposulphite is the so-called black hypo of an earlier generation of rubber workers. It is of no present interest in the rubber industry where its use survives only in some special old mixing. The chief present industrial use for the material is as an ingredient in the ignition preparation of matches. Its vogue among rubber manufacturers was because its vulcanizing effect was sufficient to allow a good cure to be made with so little additional sulphur that black non-blooming articles could be produced. Its use was thus mostly in druggists' sundries, and specialties where the non-blooming feature was particularly important. It was used in either dry or steam cure. The black hypo available today contains about 50 per cent of carbon black added to the lead salt. Its composition may, therefore, be expressed as PbS_2O_3 + Carbon.

Calcined Magnesia

Magnesia, or the oxide of magnesium is obtainable in the crude form by heating or calcining magnesite, the natural magnesium carbonate. Technically pure oxide is obtained by calcining artificial carbonate of magnesia. It is somewhat hygroscopic and should be kept in tight containers. The oxide and carbonate are distinct chemically and should not be confused. The market grades are known as double calcined heavy, medium and light calcined magnesia.

These materials are white, with approximate specific gravity 3.45, ranging from 3.25 to 3.65. The moisture is less than 1 per cent, and the loss on ignition does not exceed 5 per cent, silica, iron and alumina under 2 per cent, lime under 3 per cent. The loss on ignition does not exceed 5 per cent. The magnesia content of these materials is approximately 90 per cent.

The difference in weight per unit volume of light, medium and double calcined magnesia, respectively, is due largely to the physical quality of the material. The lighter grades are exceedingly fine, soft and velvety. They also run higher in magnesia content. Care must be used in the storage of these materials, as they are hygroscopic and absorb moisture from the air. They have basic properties.

Acknowledgment is made to the National Lead Co., Research Department, and to the General Magnesite and Magnesia Co., for data used in this article and also in the conclusion to be published in our next issue.

(To be continued)

Rubber Estate Economy

European Planters Must Simplify Methods to Meet Native Competition

WITH the abandonment of restriction in the offing the problem estates have to meet is how to reduce costs to the minimum. At present it is calculated that of the British estates less than 10 per cent are able to put their rubber on the market at an all-in cost of 6 pence to 8 pence per pound, about 30 per cent can do so at from 8 pence to 10 pence per pound, but approximately 40 per cent have all-in costs of 10 pence to 1 shilling per pound and the rest are unable to produce under 1 shilling per pound.

Matters are complicated by the problem of the native producer who is able to put large quantities of rubber on the market at a low price and thereby force a change in price standards and in quality and finish of the commodity. The scientific work on selection and bud grafting appears to offer a satisfactory solution, but it will take many years before the new system will have become sufficiently widely established to offset what competition the natives may offer in the meantime.

A very interesting book[1] has been published in Java, which offers much that is provocative and stimulating in regard to these very subjects of economy in production and native rubber. It is impossible to quote at any great length from the author, but what he has to say regarding soil upkeep, cover crops, close planting, a special tapping system invented by himself, preparation of raw rubber for the market, and native producers in West Coast of Borneo, is deserving of consideration.

Views on the care of the soil in Hevea plantations have undergone a great change in late years. Not so long ago, clean weeding was the general practice on European estates throughout the East, and this operation together with more or less drastic thinning out is still a favorite combination on many estates. The native holdings in Borneo violate all the rules of good planting, yet the gardens present a healthy appearance due chiefly to the fact that the natives have never indulged in clean weeding.

The best cover crop is *Lycopodium cernuum L.*, a plant with very short, fleshy roots that barely penetrate the soil to a depth of one inch. It draws and retains water to a remarkable degree and as far as noted after three years experimentation is free from disease. The one disadvantage seems to be that it grows rather slowly.

As for close planting, when the bounds are not overstepped, not only does this method help to keep the soil moist and to preserve the humus, but the yields per acre are considerably increased. The gains to be derived from the higher yields due to close planting are very much more than any saving in labor to be effected on estates where far fewer trees per acre are planted.

The tapping system starts from the theory that the crop from a tree depends chiefly on the amount of latex present in the bark and the turgor pressure with which the latex is extruded from the cut bark. It was decided to retain the old system of two cuts daily but to shorten the cuts considerably, the reason being that in order not to interfere with the resisting and recuperative powers of a tree, the wounding of the bark must be as slight as possible so that the wounds may heal naturally and rapidly. Therefore the length of cuts was reduced to ten cm. for older trees and to eight cm. for younger trees, while for the youngest trees of small girth five cm. was advocated, all at distances of 60 to 80 cm. on the same panel of a tree—this in contrast to the usual cut over one-half or one-third of the circumference.

Under normal conditions of soil and climate this method will result in constantly increasing yields and if not more than 5 cm. of bark is removed per cut per month, there will be no brown bast to speak of. In a tree with a girth of one meter (about 39 inches), it takes 10 to 12 years to get back to the first panel. The bark heals more rapidly and better than when the cuts are long; coolies are more easily trained to make short cuts without wounding the trees and can tap much more quickly. To overcome the difficulties presented by two cuts on one panel, a special spout was devised and one is used for each cut, the two being connected by a thread of rubber along which the latex flows from the upper cut to the lower one.

In preparing rubber for the market much unnecessary expense is incurred on estates in the endeavor to turn out rubber perfect in appearance, expenses which are seldom warranted by the advantages in prices to be obtained. For when prices are high, buyers are not critical, and when they drop, every little flaw is seized upon which to found complaints. Molensteen's factory equipment consists of a couple of hand mills for plain and diamond sheet, with which five men can easily convert 10,000 to 12,000 pounds of rubber into sheet. Each tapper brings his strained latex to the milling room where he has his own place numbered to correspond to the plot he taps. He has his own vessels into which he pours his latex and stirs into it the coagulant. In the afternoon, the mill worker rolls out the coagulum, stamping on one side of each sheet the date and on the other the number of the tapper. Thus, the output of a section and the quality of a tapper's work can be checked.

When ready for shipment, the rubber is packed into bundles weighing 60 to 70 kilos and held together by wire bands. If destined for Singapore, the bales are sometimes wrapped in jute, in mats or packed in cases, but this is not essential. Prices obtained on this rubber are not much below top prices at Singapore or Batavia, and then there are no extra costs for transportation, commission, insurance, warehousing or handling.

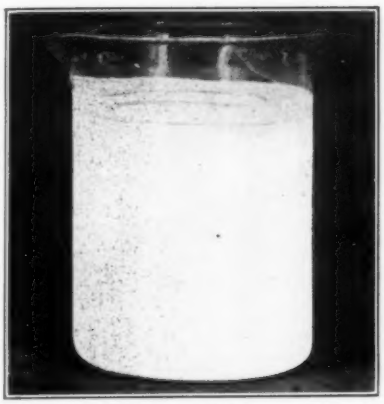
Incidentally, native rubber with 20 per cent of moisture obtained 80 guilder cents per catty (1⅓ pounds) in the interior and 85 cents in the capital, while good dry native rubber fetched 90 cents per catty when standard sheet was quoted at one guilder per half kilo (about 1.1 pounds) at Batavia. During the last two years many natives and Chinese abandoned their machinery as it was more profitable to sell rubber in an unworked and wet state, frequently adulterated into the bargain, than as regular dry sheet.

Rubber has become one of the native staple products along the West Coast of Borneo. European planters should take a hint from the natives and simplify their methods, abandoning expensive factories and equipment, if native competition is to be successfully met. The natives are gradually accumulating wealth and experience; they own the best land and have the full support of the Chinese, who cooperate in every way and back the cultivation and trade in various products with their capital and energies in a manner hard to improve.

[1] "Pioniers Arbeid op de Buitenbezittingen—20 jaar in de Rubberen Klappercultuur." (Pioneer Work in the Outer Possessions—20 years in the Rubber and Coconut industries.) By Molensteen. Publishers, G. Kolff & Co., Weltevreden, Java.

Inner Tubes *from* Rubber Latex

Made by a Novel Process, Both Simple and Efficient



A Beaker of Latex

Splitting and Tearing Test of Royal Ustex Tube
Cuts Made Across Tube With Scissors Have Been Stretched Both Circumferentially and Across. Note That Rubber Tears Slightly and in No Particular Direction, Denoting Absence of Grain.

IT was announced last month by a prominent rubber company[1] that inner tubes made from natural rubber latex had been commercially developed and were on the market for motorists who ride on balloon tires and desire long tube service. The new tubes show superior physical tests as to wear, tensile strength, aging, resistance to tearing and splitting.

While the high quality of the new tube will be of interest to the public, the rubber world will find its chief interest in the fact that it is manufactured directly from latex. The process inaugurates a new era in rubber manufacturing as epoch-making as anything since the original discovery of the vulcanization process.

Until a few years ago, every ounce of rubber used throughout the world was dry rubber—coagulated with acid on the plantations, and shipped in sheets or slabs to the markets of the world. Then rubber scientists began to consider the possibilities of latex. But latex was a fluid that spoiled quickly, and none was available in this country for experimental work. The story of the solution of the problem of transporting latex 10,000 miles from the plantations to America is a romance in itself. Today millions of gallons are annually imported into the United States.

The first important use of latex was in the manufacture of web cord fabric. This was one of the most important developments in recent tire history. But web cord is buried deep in the tire carcass and its importance can be appreciated only by the expert.

But now we have the latex tube—a vastly superior product that any one witnessing the comparative tests can see the difference. And its quality is due to the fact that it is made from latex.

Tube making until now has been a complicated process. First there was the working of the rubber into a soft dough, and incorporating the dry chemicals necessary to vulcanization and to giving the tube greater strength, heat resistance, long life, etc. Afterward there was the operation of fashioning the tube into proper shape—a process of many steps requiring much hand work.

Now, by a method that is remarkable in its simplicity, an inner tube is produced directly from the latex. The necessary chemicals are liquefied and poured into the latex and stirred until every atom has been taken up by the latex. Each molecule of rubber takes up its proper portion of the ingredients. There is an even distribution of the chemicals throughout the latex, giving a uniformly mixed rubber compound that is not obtainable where chemicals are mixed into dry rubber.

With the exception of curing, this new method changes the whole order of tube-manufacturing equipment. The washing, mixing and tubing machines, and the calenders are replaced by a light, simple apparatus requiring only a fraction of the floor space. This is a new step forward in tube manufacturing.

Another point is that the tube is made in circular form. This means there will be a complete absence of wrinkling when the tube is inserted in the casing.

The non-splitting feature is quite remarkable. The strongest man can hardly make the slightest tear. But when a tear is made there is no splitting—only a short tear. The tears are nearly always in a circular form. It is as if the particles of rubber were in circular form, and that, when finally a tear is effected, the break follows around the circular base of these particles.

Because of the form in which the raw materials are used, and the methods of manufacture, all of the natural qualities of the pure rubber latex are retained in the finished tube. Equally remarkable, there is a complete absence of grain in any direction in the rubber, as the stock has not been put through any grain-producing process.

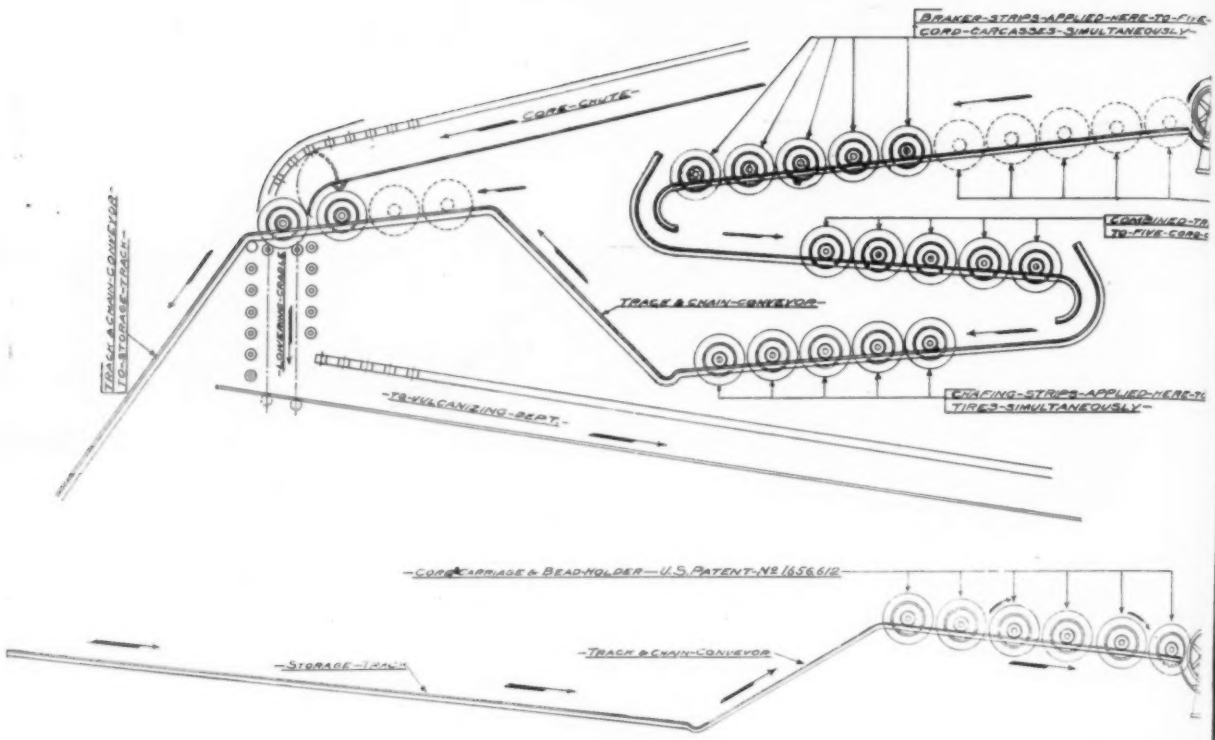
It is well known in rubber circles that rubber compounding by the standard method is subject to variation and must be constantly supervised to insure any degree of uniformity. Any lack of uniformity is especially undesirable in an article like an inner tube. With the scientifically controlled chemical process by which latex tubes are produced, a uniformity of quality in the rubber stock is attained that is impossible to secure in the ordinary tube.

The solution method of compounding insures a complete and equal mixture of all the ingredients throughout the rubber stock. Uniformity is further obtained because the latex is compounded in batches of 2,000 pounds, or more, as against the 200-pound batch used in milling stock for tubes manufactured in the usual manner. Thus the chances for variation in the compounding are greatly reduced with the new process.

With the exactness and control inherent in the new method there is no difference in the thickness of the rubber on tread and rim sides of the tube, a feature not found in a molded, or circular-shaped tube made on a curved mandrel by any other method.

Acknowledgment is made to *U. S. Tire Retailer* for data and illustrations used in this article.

[1]The United States Rubber Co., New York, N. Y.



Mass Production

High Speed Continuous Automatic System for Mechanical Efficiency and

MASS or unit volume production is a basic essential in modern manufacturing industry. Such systems have met with notable success in the assembly lines for automobiles. The development of such a system for building tires has engrossed the attention of engineers in the rubber industry, especially for the manufacture of pneumatic tires and footwear. The system here illustrated and described is the result of 12 years' study and experimentation on the part of a versatile engineer of worldwide experience.

The patented mechanisms grouped in the moving assembly system shown in the diagram are 12 in number. These machine units assembled together form a complete tire building plant with a maximum capacity of 300 tires per hour regardless of tire sizes, widths or number of cord plies.

Assemblies can also be made for low speed tire production capacities per hour as follows: 4 ply cord, 75 tires; 5 ply cord, 60 tires, and 6 ply cord, 50 tires. For increased numbers of plies capacities decrease proportionately. This low speed production can be increased proportionately by the installation of two or more cord laying machines as the tire output may require.

High Speed Assembly

The accompanying diagram represents the arrangement of the machine assembly for high speed tire production.

While the most practical system of assembling the several operating units into one complete tire building plant is largely dependent upon conditions existing in each individual plant the diagram shows a most practical and economical high speed double deck return system with a capacity of 300 four-ply tires per hour operated as follows.

After a number of tire building cores have been mounted on an equal number of combination core and bead carriages, the carriages are placed on the longitudinally inclined storage track for free rolling movement and are automatically released and fed downwardly to the first ply cord laying machine at the rate of one core carriage each 12 seconds.

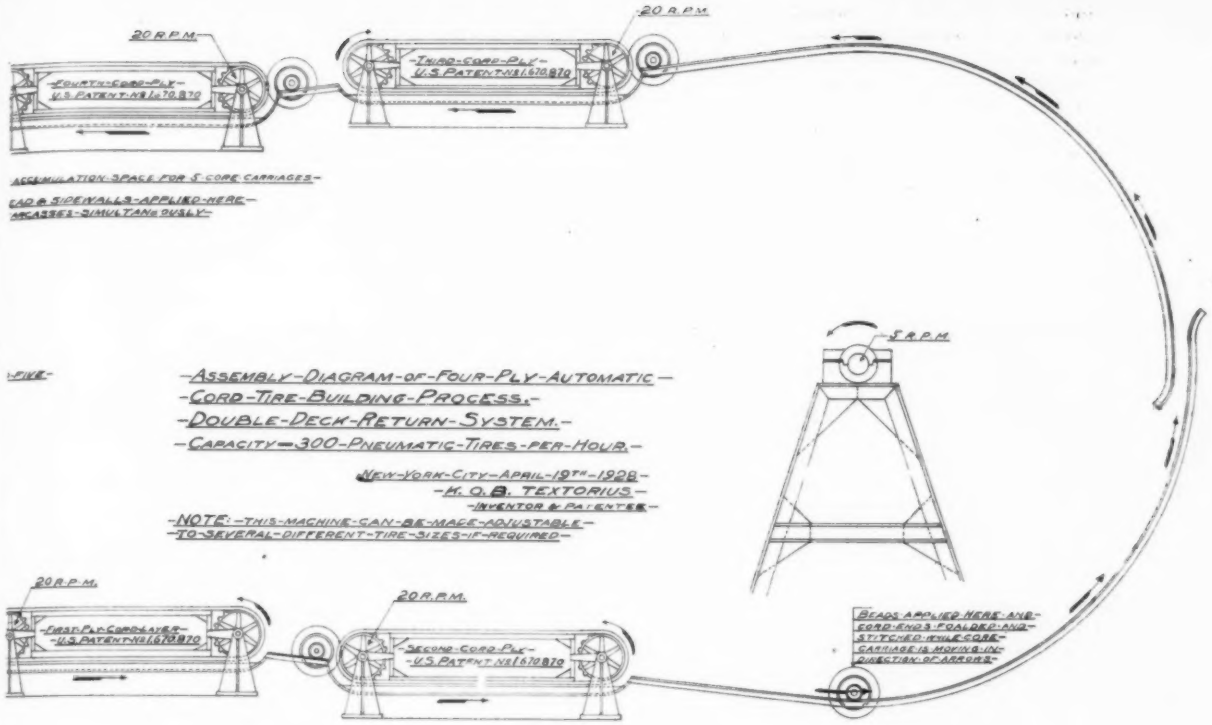
Cord Laying Machine

Continuously moving sprocket chains traveling at the rate of one complete revolution every 12 seconds or 5 revolutions per minute, are provided with cam acting releasing plates and extending fork shaped guide plates which compel the carriage to move in a forward direction through the entire length of the first ply laying machine unit. The core carriage is then released and travels by its own free movement towards the second ply laying machine unit which is identical in construction and actuating movements as the first ply machine except that the cord fabric is laid at 90 degrees angle to the first ply.

After the core carriage has traversed the second ply laying machine unit the prepared beads are removed from adjacent multi-armed supports and are positioned in the bead channels.

Thereafter the core carriage is picked up by a slowly revolving bead cord folding and stitching mechanism and

[1]Data supplied by K. O. B. Textorious, 245 W. 55th street, New York, N. Y.



on of Cord Tires[1]

Building Complete Pneumatic Tire Casings Saving of Space and Labor

radially conveyed to the upper deck on which the third ply laying machine is located. After the core carriage has passed through the 3rd and 4th ply laying machine units the carcass, composed of four complete cord-plies, is ready. At this point the core carriage comes to a stop for a period of 48 seconds while 4 more carcasses are being completed upon separate cores and conveyed upon individual carriages at the rate of 5 each minute.

From this accumulation point the 5 core carriages move forward in one group towards the breaker strip laying mechanism where the application of the strip is applied simultaneously to all 5 carcasses. Following this operation the 5 core carriages are released and together move to the level below where the combined tread and side walls are applied simultaneously to the entire five.

Then the carriages are released again and move on to the third and lowest level where the application of chafing strips is made simultaneously to all 5 carcasses. This completes the building up of the tire.

The carriages again released are conveyed upwardly by an inclined endless sprocket chain conveyer to an elevated platform for individual inspection of the tires. Next the core carriage heads are detached and separated to permit the core and tire to drop into a balanced cradle. This descends to an inclined runway or chute leading to the vulcanizing department.

Core Mounting and Carriage Assembling

Following the tire demounting in the vulcanizing department airbags are substituted for the cores. The core mounting and reloading of the carriages for return to the tire building units are accomplished as follows.

An inclined chute or runway equipped with automatic releasing and loading mechanism delivers empty cores into the detached and separate core cariage after which the carriage heads are again joined and bolted. The core carriage being released again, travels by gravity on an inclined endless sprocket chain conveyer to an open bridge connecting with the storage track. The bridge is balanced to permit its free end to drop. As the carriage rolls off the bridge on the storage track the bridge again opens permitting the core carriage to pass under and down the inclined track connecting with an endless sprocket chain conveyer. This picks up the core carriage and delivers it to the upper level of the storage track for repetition of the operation.

Low Speed Assembly

While the double deck return system described above is adapted to either high or low speed production, for the latter purpose a single level arrangement can be made to suit any existing tire building conditions. Thus there is required but one right and left combination cord laying unit adjustable to lay 4, 5 or 6 cord plies and to handle various sizes of tires. Where more than 6 plies are required as in large truck tires the right and left laying unit is advantageous and economical.

As previously described, the core and bead carriages are placed on the longitudinally inclined storage track for free

rolling movement and are automatically released and fed downwardly to the cord laying machine at the rate of one carriage every 12 seconds. While traversing the entire length of the cord laying machine the core is completely covered with the first ply of cords. Thereafter the carriage is picked up by a slowly revolving lever and conveyed radially to the upper deck. The carriage then immediately returns to the storage track over a connecting bridge adjusted to operate automatically for adding each ply successively as required.

After the cord carcass is completed the bridge locks automatically permitting the carriage to travel along the upper deck track to the breaker strip application point and then to the tread and sidewall and chafing strip application points. Thence it continues on to the inspection and releasing platform and finally back to the storage track practically in the same way as in the high speed machine.

The Rubber Institute Begins Work

Washington Approves Aims of Organization—New Quarters Established and Executive Committee Appointed

THE declaration of its aims and plans having received the acceptance of the Department of Justice of the United States and the Federal Trade Commission, the Rubber Institute has established headquarters at 1776 Broadway, New York, N. Y., where the entire twenty-second floor has been leased, and is now turning its attention and energies to the inauguration of a program for effecting the purposes of the Institute. H. H. White is in charge, having been appointed secretary and treasurer.

At the first regular meeting of the Board of Directors the following were elected members of the Executive Committee: J. D. Tew, Samuel Woolner, Jr., F. C. Hood, A. F. Townsend, E. A. Boyer, W. O'Neil, and H. T. Dunn. Fifteen directors were chosen at the June meeting in accordance with the by-laws which provide for the election of three directors annually for a term of five years. The following were elected for the five-year period: H. S. Firestone, A. F. Townsend and A. B. Cornell; four years, H. T. Dunn, F. C. Hood and E. A. Boyer; three years, P. W. Litchfield, W. O'Neil and Thomas Matchett; two years, C. B. Seger, Samuel Woolner, Jr., and C. D. Garretson, and for one year, J. D. Tew, F. A. Seiberling and C. S. Dickey No standing committee other than the Executive Committee was elected at the meeting.

The first work undertaken by the Institute was the grouping of the manufacturers into six classes and the appointment of a manufacturer from each class to organize a conference to consider the distribution problems and trade practices of his particular group and decide what rules will best serve its interests. J. D. Tew was selected to represent tires, A. F. Townsend, mechanical goods, H. E. Sawyer, footwear, E. A. Boyer, hard rubber goods, F. C. Hood, heels and soles and W. F. Pfeiffer, druggists' sundries.

The tire and mechanical goods divisions have already begun conferences, and in the former group the following committee is at work on recommendations for trade practice rules applicable to the tire replacement trade: L. C. Rockhill, sales manager, Miller Rubber Co.; L. R. Jackson, sales manager, Firestone Tire & Rubber Co.; Robert S. Wilson, vice president and sales manager, Goodyear Tire & Rubber Co.; L. A. McQueen, sales manager, The B. F Goodrich Co.; C. S. Dickey, Corduroy Tire & Rubber Co., C. Edward Murray, Jr., president Murray Rubber Co., and H. L. Post, vice president, Seiberling Tire & Rubber Co.

In order to profit by the experience and judgment of the whole industry, manufacturers are urged to send representatives to these conferences, and it is believed that the rules and regulations so made will meet with general approval and acceptance throughout the trade. Such rules as are approved at the conferences will be recommended to the Executive Committee and submitted from time to time to the Federal Trade Commission for its consideration. If, after investigation, the Commission approves them, they become the recognized rules for trade practice in the industry.

Helium in the Rubber Industry

Recommended for Toy Balloons and in Drying Rubber Chemicals

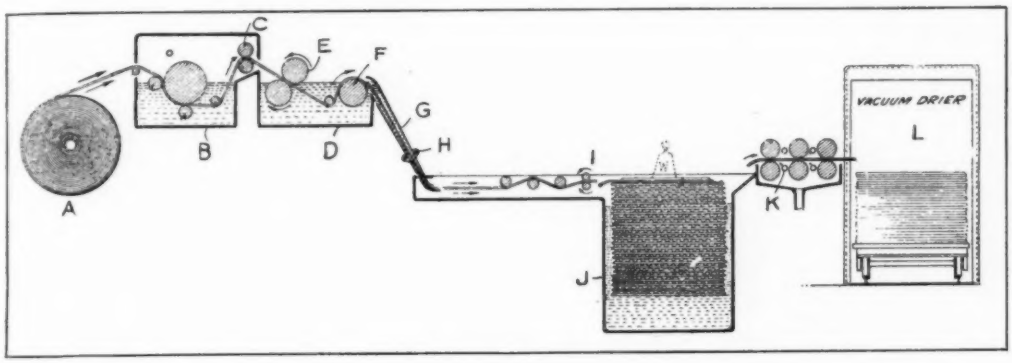
MANUFACTURERS of gas filled toy balloons find that their sales have been limited due to city ordinances against the use of hydrogen for this purpose, restrictions by insurance companies and by the management of some hotels in large cities where balloons are frequently used for inside functions in connection with banquets, etertainments, bazaars, etc.

Helium gas is now being used as safe non-inflammable inflation for toy balloons which meets all such restrictions. This market is just beginning to be developed and helium is now available for filling toy balloons in Chicago, Cleveland, and New York City. Helium is somewhat more expensive than hydrogen, but since about 200 No. 70 balloons can be filled from a cylinder of 200 cubic feet of helium the increased cost per balloon is entirely insignificant in view of the safety from the non-inflammable helium. Helium is supplied compressed in cylinders under 2,000 pounds pressure per square inch. At this pressure the standard cylinder which is of special construction, holds about 200 cubic feet.

A study of the chemical and physical characteristics of helium indicates that it can be used as an inert, heat carrying gas for drying operations.

In the drying of organic and inorganic chemicals, whether affected by contact with air or not, helium may be used, in connection with silica gel or charcoal, by circulation, to more rapidly dry such products without the use of a vacuum, and at the same time the temperature of the drying operation could be more closely controlled. Water and other solvents have a higher vapor pressure and consequently would evaporate more quickly and more completely in an atmosphere of helium or other gas than in a vacuum. Since helium is chemically inert, has a high heat conductivity, a low density, and can be circulated rapidly, the time of drying operations can be greatly reduced, and a product of superior quality produced.

Fiber Reinforcement of Rubber[1]



Wescott System of Reinforcing Rubber

THERE has been considerable activity in perfecting processes for the use of rubber latex for impregnating fibers and fibrous bodies because latex is the ideal form in which to convey rubber into the interior of fibers owing to its ability to enter capillaries. This is something not possible with the ordinary types of dissolved rubber or rubber cements. Rubber brought into a liquid state by carbon bisulphide will not enter capillaries and can only be used for surfacing effects. Commercial latex preserved with ammonia contains about 30 per cent of rubber. Cloth cords, thread, etc., will take up and hold by capillarity from 100 to 200 per cent of latex. On a dry basis this means a final product containing from 23 to 37 per cent rubber.

A treated fabric or cord containing more than half its weight of textile fiber has the properties of a textile rather than a rubber article. It is simply cemented fiber and not reinforced rubber. As a matter of fact, such an impregnated cord is less extensible and stiffer than the original unimpregnated cord because the fibers are cemented together by rubber films too thin to permit the normal play of fiber over fiber. Greater entrance of rubber by that method of treatment is impractical.

According to the latex impregnating process here described, fibrous material carrying rubber can be made with a content from 50 to 65 per cent of gum. Such material is produced by distributing fiber in the right amount in a body of latex, instead of latex in a body of fiber, and then coagulating the gum. Reinforced rubber so produced is washed to free it from traces of the coagulant which may have been used, and to eliminate such soluble non-rubber constituents of latex as may be present. The tendency to deteriorate is thus minimized.

In producing materials by this process the latex is purified preliminarily to rid it of as much of its non-rubber proteids as possible. The amount of latex which can be associated with fiber, may be increased in various ways. One that admits of continuous operation is to saturate open textured goods, which may be cord, yarn, fabric or batted material with such latex as it will hold. Then skin coat the body of latex and fiber so produced by surface coagulation, sealing into the goods the residuary latex. This skin coating of rubber can be almost instantaneously done by a contact with a bath of 20 or 30 per cent solution of acetic acid or other suitable chemical.

Enough latex can be carried over with the fiber into the acid bath to yield on solidification a 50 per cent rubber content. Where a larger per cent of rubber is desired additional latex is introduced after production of the skin coating by injecting more latex into the interior of the coated article under some pressure. A convenient way to effect this injection is to run a body of fiber continuously from the latex bath into and through a bath of acid at a lower level; passage from one bath to the other being through some sort of nozzle. The nozzle not only serves to prevent back flow of acid into the latex but functions to compress the open textured rubber skin coating as it is formed and thus aids in forming a fluid tight membrane.

As the article skin coats in the acid bath the hydraulic pressure of latex behind it forces more latex into the interior of the textile. The amount so introduced or the distention produced, is automatically limited by the length and disposition of the included fibers. With loosely woven or loosely twisted material it is practicable to introduce more latex in this way than with close woven or closer twisted material. Distention can go no further. At this stage in the operation, the material carries a skin of coagulated rubber and contains uncoagulated rubber interiorily. Interior coagulation can be hastened through manipulation of the material by festooning it about pulleys or rolls within the acid bath.

After the coagulation treatment the material is wet, distended and bag-like. It is washed by passage through a succession of rolls and being allowed to expand under a spray of water after passing each roll thus giving a product that can be quickly and readily dried. By passing the dried material between rolls of different sizes or having differential speeds there is a sort of chattering effect set up which tends to bank the rubber in transverse layers causing an accordion-like plated structure throughout the article. The result is not merely superficial corrugation but an internal structure extending through the cross section of the goods in which the crumpled fibers gain greatly increased extensibility in the direction of the crumpling.

In cord-like material made after this plan the body of the product is rubber and the fiber is present as reinforcement. Such a tire cord, for example, cannot be made with less than 50 per cent of rubber in the final article and in practice usually contains about 75 per cent.

The apparatus for manufacturing reinforced rubber products by this process is illustrated in schematic longitudinal arrangement. In this diagram *A* represents the roll of fibrous material destined for reinforcement of the rubber from the latex. From roll *A* the material passes through a series of rollers operating in a hooded tank *B* which may

[1] U. S. Patent No. 1,671,914. W. B. Wescott, assignor to Rubber Research Corp., Boston, Mass.

contain hot water, acidulated water or latex and can be heated by steam. The material passes out of tank *B* through a pair of squeeze rollers *C* for removal of its excess liquid which drains back into the tank. In the open latex tank *D* the wet material passes down between squeeze rollers *E* whose meeting point or "pinch" lies at or just below the surface of the latex in *B*. This latex bath may contain in suspension such fillers as are desired in the final product.

The web or sheet passes from tank *D* over a roller *F* into a chute *G*. The latter is full of latex and tapers downwardly towards an acid spray located at *H*. Here a skin of coagulated rubber is formed almost instantly. Within this skin the hydrostatic head in the chute *G* forces more latex expanding the fabric sheet or cord. Beyond the spray chamber *H* the fabric is compressed as it leaves *G* the outlet of which is narrowed for that purpose. In the diagram the sheet coming from chute *G* is shown in cut lengths squeezed by the rollers *I* and then stacked in an acid bath well *J* where they are kept submerged by weight *W*. Separators of aluminum netting or heavy open weave canvas or fabric are used to facilitate penetration of the acid. From the acid well *J* the pickled sheets are passed through a series of compression rollers *K*, loaded on a car and dried in a vacuum drier *L*.

Why British Discarded Restriction

Government's Reasons for Relegating Rubber Export Repression Policy to Limbo of Lost Causes — Price Control Fast Slipping, and Empire's Financial Prestige in Peril

THAT grave reasons of state had quite as much to do with the abolition of restriction on exports of crude rubber from British colonies as the pleas of many planters or the obvious economic dislocation within the rubber industry, was frankly stated by Colonial Secretary Amery in a reply to inquiries recently made in the House of Commons as to the motives which impelled him to urge and the government to decide upon the removal of all rubber shipment barriers next November, although the government has not yet disclosed the full text of the report of its Independent Committee on which it based its abolition decision of April 4 last.

The colonial secretary, concededly one of the best informed officials regarding planters' problems, said that this great export industry in British hands, of which the product is largely consumed in the United States, plays an important part in the empire's balance of trade and in the maintenance of the gold standard, not because of the profits per pound nor the earnings of some companies, but in virtue of the total amount of money spent in British territory or paid to British producers on their product of British rubber. He contended that any position which steadily undermined the British producer and transferred the rubber industry to Dutch hands was certainly not helping Great Britain in the task of holding her own in the world, and that the best interests of the nation plainly dictated the abandonment of the Stevenson scheme at the earliest opportunity.

How Reclaim and Dutch Rubber Hurt

At the beginning of restriction in November, 1922, he stated that production was running at some 400,000 tons, consumption at about 300,000 tons, and surplus stocks totaled 110,000 tons; and that the British were handicapped by the fact that the utmost they could control was but 75 per cent of production. Under restriction, however, it fell to about half that figure and the government was discovering to its dismay that its power to fix the price of rubber was growing less day by day. Incalculable elements mocked every effort to maintain pivotal prices. He cited as powerful factors in restriction's undoing the phenomenal production of reclaimed rubber and the unforeseen elasticity of the supply from the Netherlands East Indies, the native Dutch production alone soaring from 17,000 tons in 1922 to 100,000 tons in 1927. The Colonial Office, vitally interested in the development of industry in Malaya, viewed with no small concern, he said, the increase in the output of rubber from Dutch territory by 142 per cent during the 1922-1927 period, while that of Malaya and the Straits Settlements increased in the same time but 13 per cent; and the Dutch share of the world export total went from 23 per cent of the 400,000 tons in 1922 to 38 per cent of the 605,000 tons in 1927.

The colonial secretary said that one of the most distressing results of restriction has been loss of productive efficiency. Although plantation overhead charges may not be reduced, it costs more to turn out a pound of rubber when production is restricted; and he quoted the head of the Dunlop company, Sir Eric Geddes, as confirming this fact when he stated that with restriction at a nominal 60 per cent, but actually 50, what would normally be an overhead of 3 pence per pound on full production is today 6 pence per pound, thus reducing British planters' present profits and future chances. Dutch producers have been spared such increase and have been free to study and apply every conceivable new development that would put the British producer at a disadvantage.

Government Intermeddling Proves Unwise

Former defenders of the restriction scheme now freely concede that from the outset they had misgivings about its ultimate success. One of its fundamental weaknesses, they admit, has been the fact that it has rested solely on British support; without the good will at least of other nations with planting interests, it was futile to hope to make it a permanent policy. Another mistake which they admit was relying too much on government favor which might at any time waver or fail outright to serve partisan expediency. They declare that when an industry forms a partnership with government, even though the latter may act in good faith, government may do it as much harm as good in not being able to understand trade complexities or to readily conform its policy to changing industrial conditions. The planters, they say, took a chance on government intermeddling and lost.

Among the causes for the failure of the scheme are noted its unwieldy and inelastic nature, a too arbitrary management, inopportune raising of pivotal prices, the canceling of unused coupons, corruption of native staffs, and the incessant and considerable smuggling. As Secretary Amery succinctly put it, the industry was in a thoroughly unhealthy position, temporizing with the situation as advocates of gradual removal suggested would have only prolonged the agony and strengthened the position of competitors, and if the industry was to get the radical relief it needed that could come only through early and complete abolition of restriction.

Drinking Water Systems

For Rubber Mills

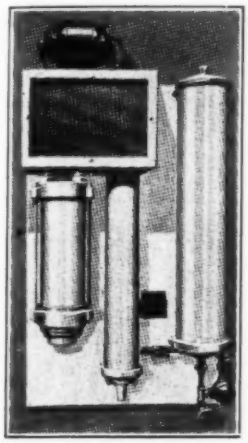


Fig. 3—Small Ozone Sterilizing Unit

EVERY device which promotes the health and efficiency of the workers in a plant may be properly classed as a manufacturing economy, and for this reason, if no other, should receive careful attention. Heating and ventilation, suitable lighting facilities, modern sanitary conveniences, and an ample supply of pure cool drinking water, with plenty of easily accessible fountains, add greatly to the comfort and efficiency of the employes, and money invested in equipment for these various purposes will be found to produce an ample return.

Although mentioned last, the matter of drinking water is one of the most important. However, until recently it has not received the attention which the others have. Epidemics, and the bad effects of drinking too little or too cold water, have called attention to the desirability of employing systems of this kind, and they now usually form a part of the regular equipment in new plants and also in older ones under up-to-date management. Aside from the matter of health and efficiency of the employes, is the saving in time brought about by properly locating and providing a suitable number of outlets.

It has been shown that in a room 110 by 300 feet, 160 men evenly distributed will spend about 8,700 hours in the course of a year in making trips to water tanks or faucets located at one end of the room. By using four drinking fountains properly spaced, this can be reduced to about 3,500 hours, a saving of 5,200 hours, which, at 50 cents per hour, will amount to $2,600 per year, or $16.25 per person.

As regards the cost of operation, it was found in the case of several large mills, employing from 1,000 to 1,500 persons, that the annual cost of drinking water per person averaged $2 with the older type of equipment, which consisted of pail and dipper, ice water tanks, and uncooled water from service faucets. After installing the most efficient equipment for furnishing a constant supply of pure cool circulated water, the cost per person was reduced to about $1.35 per year.

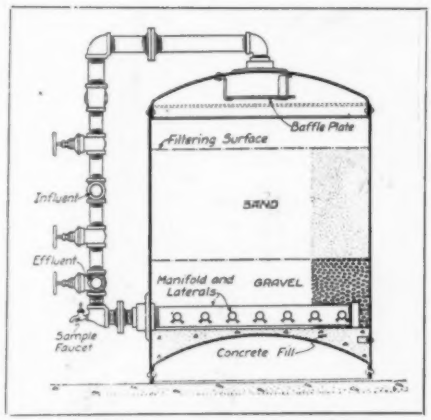


Fig. 1—Pressure Type Sand Filter

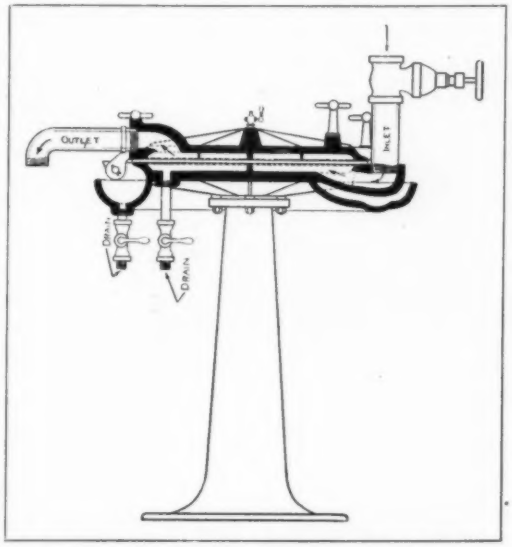


Fig. 2—Disk Filter Using Cotton Fabric

In considering a system of this kind for a large plant, the quality of the water must first be investigated and the necessary equipment decided upon for purposes of purification, while the second part of the problem relates to the matter of cooling and distribution. The present article will deal with the first of these, and describe briefly some of the more common devices employed in this connection at the present time.

The source of supply will vary in different cases, and may come from lakes, streams, deep wells, etc., while the system from which it is drawn may be public or private. When the water is taken from city mains, the verdict of the local health department is usually to be relied upon as to purity, but if there is any question of this, or if the supply comes from a private system, a chemical analysis should always be obtained from an expert, and his advice followed as to the necessary precautions which should be taken. It sometimes happens that while the city water is free from harmful bacteria, it is unpalatable either from chemical treatment or natural causes which give it a cloudy appearance or unpleasant taste or odor. Conditions of this kind should always be removed, as well as unhealthful ones, and the water made palatable as well as free from dangerous germs.

On the other hand, a water which is clear and tasteless may contain an abundance of disease producing bacteria, so that external appearances should never be

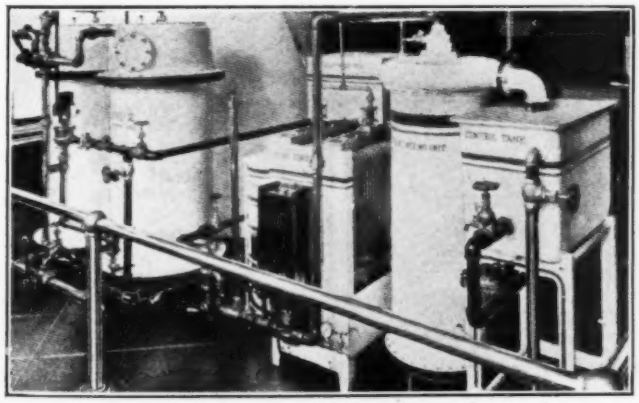


Fig. 4—Filter and Ozone Sterilizer Outfit

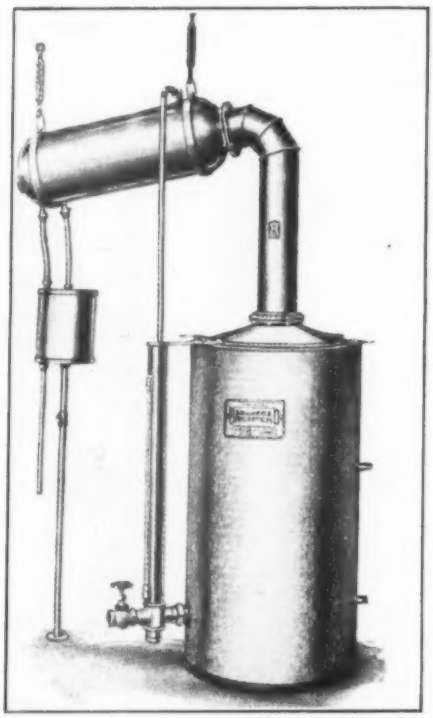


Fig. 6—Distilling Apparatus

trusted. An illustration of this is the water from an artesian well, which one would naturally expect to be free from all harmful impurities, but even here there is the danger of surface water seeping in through underground channels. The most common water-borne disease in this country is typhoid, and its germs are found in practically all rivers and lakes into which sewage is discharged.

The methods and equipment to be employed for purification will depend entirely upon the impurities found to be present by analysis. If the water is simply cloudy in appearance, and is free from all harmful germs, filtering is probably all that is necessary, and this same process will also remove unpleasant tastes and odors in certain cases. If, after filtering, tastes or odors persist, it should be further treated with ozone. In case disease-producing germs are present, or likely to find their way in by seepage, the water must be sterilized in addition to filtering. If, however, it is clear and sparkling, filtering may be dispensed with, but if at all cloudy, all suspended matter must be removed before any of the processes of sterilization are applied.

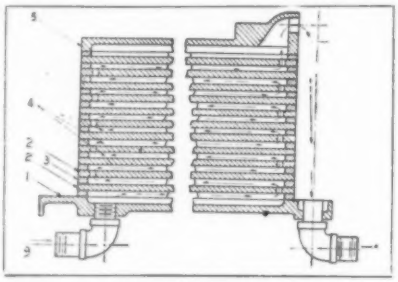


Fig. 5—Electric Device for Producing Coagulation

Four methods are commonly used in the purification of drinking water, depending somewhat upon its condition and the quantity to be treated. The one most generally employed on a large scale, in connection with municipal systems, is that of chlorination, in which either a solution of hypochlorite of lime, or the free chlorine gas is introduced into the water. The quantity used in either case is so minute as to be harmless, but in some instances leaves a disagreeable taste. This, however, may be removed by ozone, but as the latter is also a sterilizing agent in itself, it would seem best to employ this alone in case of private plants, thus simplifying the process somewhat. Although chlorination is more commonly used on a large scale, automatic commercial apparatus is available for use in plants of small size. Ultra-violet rays are also used successfully in some cases, these being generated by a mercury-vapor arc enclosed in a quartz tube. A simple appliance suitable for this purpose, ranging in sizes adapted to factory work may be obtained, which is automatic and effective in most cases.

If, for any reason, the methods given for obtaining pure water are not practical under certain conditions, or a chemically pure product is desired, distillation may be resorted to. While this is effective in the destruction of bacteria, it also removes all mineral salts and makes the water less palatable for drinking purposes.

The quantity of water to be supplied per person will vary with the occupation, and in a rubber mill the requirements will be somewhat different in the various departments. For those engaged in heavy work, and exposed to a high temperature, one quart per hour per person should be provided; for ordinary factory operations, one pint; and for office workers, one-half pint. These quantities, in each case, include both the water consumed and wasted.

The most satisfactory temperature for drinking purposes has been found to range from 45 to 50 degrees, and it is customary to deliver the water to the distributing system at the lower temperature, and circulate it at such a velocity that the total rise in passing through the circuit, back to the cooler, will not exceed 5 degrees. Water cooled by direct contact with ice is liable to approach the freezing point at times, and is much too cold for safety, especially if taken in any considerable quantity by a person who is overheated.

On the other hand, water having a temperature very much above 50 degrees, does not quench the thirst, and being unpalatable, is not consumed in quantities necessary for good health. It may be noted in passing that the ice should never be placed directly in the water to be used for drinking; natural ice from lakes and rivers is liable to contain disease germs, while the artificial product, made from distilled water, may be pure in itself but is liable to become contaminated in handling. For these reasons, all modern coolers employing ice keep the water in a separate compartment.

There are many effective filters upon the market, and it is only possible in the present case to mention some of the more general characteristics and types. It is well to state in this connection, that the fact that any particular device is shown does not indicate its superiority to others in any way, but that it is used as an illustration of a type or principle. The filtering material most commonly used is quartz sand, gravel, prepared charcoal, and special fabrics in connection with fine wire netting. In some cases the filtering material is renewed after it becomes sufficiently coated to seriously retard the flow, while with other types the current is reversed at intervals and the accumulations washed into the sewer.

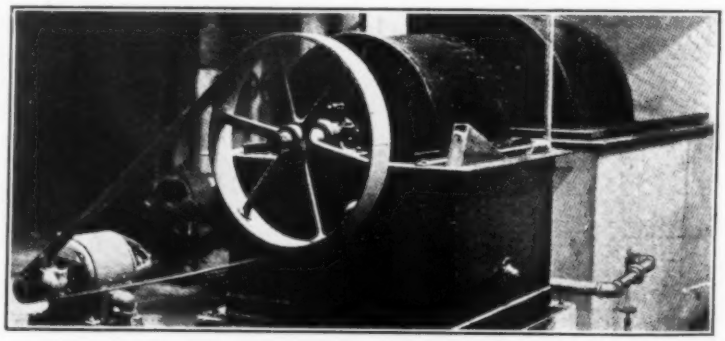


Fig. 7—Mechanical Water Cooling Apparatus

A form of filter quite frequently used for drinking water systems in large manufacturing plants makes use of sand on a supporting gravel bed, as shown in Figure 1. The water in this case enters at the top, passes downward through the sand and gravel and enters the discharge pipe through special openings in a system of manifolds and laterals. The actual filtering, with one arrangement of this kind, is done by a substance which gradually accumulates on top of the sand from substances contained in the water, and in order to hasten this process a coagulant, usually some form of alum, is automatically added to the water in small quantities just before it enters the tank. This combines with certain salts contained in the water and is deposited as a feathery mass on top of the sand bed, thus producing a filter which will not only remove the finest particles in suspension but a large proportion of the bacteria which are attached to them. The filter is cleaned by "back-washing," as previously described, at intervals varying from one to six or seven days, depending upon the condition of the water and the amount used. Sometimes two chambers are employed in series, one charged with sand and the other with charcoal.

One filter of this type produces coagulation electrically instead of by the use of a chemical solution as noted above. The device shown in Figure 2 is of the disk type and is designed especially for use where the water is already comparatively clean, and is sometimes employed to give an extra degree of purity to water which has passed through a filter of simple form which removes only the coarser material. The filtering element is a renewable disk of compressed cotton fiber, and is discarded when clogged and a new one substituted.

Sterilizers have already been mentioned in a general way and only one or two types will be shown in the present connection. Ozone, which is an especially active form of oxygen is coming into quite general use in connection with ventilation and various industrial processes, and is particularly well adapted to water purification. It is produced by passing a current of electricity through air, under specified conditions, thus partially decomposing it and liberating a certain amount of pure oxygen. When used as a sterilizer the mixture of air and ozone is brought into intimate contact with the water in a special "contact tower," where the latter is both sterilized and aerated. A small ozonater is shown in Figure 3, and a larger outfit including filters and control tank, in Figure 4.

It is becoming quite common, where both filtration and sterilization are required, to carry out the entire process electrically; that is, coagulation is produced by passing the water between electrodes, as in Figure 5, after which it is filtered and ozonated. The cost of sterilization by any of the methods mentioned is only a few cents per thousand gallons; that for the complete electric process described above, usually averaging less than 10 cents per thousand gallons. Another concern gives the following estimate, which is much the same, for ordinary household rates.

Capacity, Gals. Per Hr.	Purifying, Kw. Hr.	Ozonating, Kw. Hr.
80 to 100	0.05	0.05
100 to 150	0.10	0.10
200 to 250	0.125	0.125

The apparatus for distilled water is very simple, a complete outfit, employing steam and having a capacity ranging from 30 to 100 gallons per hour is shown in Figure 6. The steam and cooling water requirements for this device are as follows:

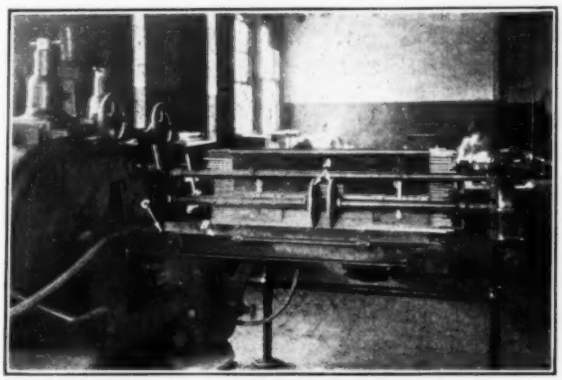
Capacity Per Hr. Gals.	Pounds Steam	Pounds Cooling Water
30	270	240
50	450	400
75	675	600
100	900	800

The refrigerating equipment required for cooling drinking water is similar to that employed for cooling the refrigerators in stores, retail markets and hotels, and is very simple in construction. A complete outfit, including refrigerating machine and cooler, having capacities ranging from 20 to 200 gallons per hour is shown in Figure 7. Other machines are usually of the portable or semi-portable type with the ammonia condenser mounted upon an adjacent building wall. The compression system using ammonia or carbon-dioxide as the refrigerant is commonly employed, although the absorption system, using gas as the source of heat, is adapted to cases within its capacity.

A following article will take up the cooling and distributing side of the problem and give the necessary engineering data for laying out systems of this kind.

Feeds for Centerless Grinders

At a meeting of the Chicago section of the American Society of Mechanical Engineers, H. L. Blood, chief of machine design division, Western Electric Co., read a paper descriptive of two ingenious feeding devices for use in connection with centerless grinders. In the one designed to automaticaly feed steel tubes, these were stacked on an inclined rack having a succession of steps that hold the tubes parallel as they descend the incline. The steps also serve to prevent any of the tubes from being carried along on top of others. The tubes roll singly on to a series of power driven rollers operated by one of the shafts of the grinder. The necessary traction required to feed the tubes into the grinder is supplied magnetically.



Level Automatic Feed

The second attachment used for feeding tubes into centerless grinders is pictured in the accompanying illustration. The tubes, which are of hard rubber in this case, are laid in a V-shaped hopper at the bottom of which are two rubber tired disks A. These revolve slowly and roll the tubes downward against one side of the hopper dropping them one at a time upon a moving belt B which carries them into a nozzle C. Inside this nozzle streams of water impinge upon the tubes and convey them onward into the grinding machine.

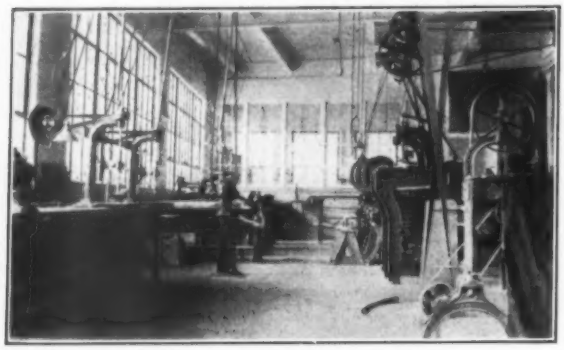
Americans' Canadian Rubber Investments

Americans are said to have underwritten Canadian rubber company securities to the extent of $9,500,000 from 1914 to 1927, inclusive. To such sum might be added a considerable investment otherwise made in Canadian branch works of American rubber factories.

The Wellman Co.

Manufacturer of the Pioneer Sole Cutting Machine

For generations preceding the invention of the Wellman sole cutting machine all rubber shoe soles were cut by hand knife. The operator accomplished the task by following the outline of a thin sheet metal pattern using back hand strokes, one for the fore part and one for the back part. The work was skillful but slow, an expert cutter could under favorable conditions cut 800 pairs of soles a day. With a modern



Interior of the Wellman Plant

Wellman machine, however, the output has been raised to 1,000 pairs per hour per machine.

The first machine for rubber sole cutting was installed in the Melrose factory of the Boston Rubber Shoe Co., in 1888. The action of the machine in cutting was controlled by a cam device which permitted the cutting blade to contact on a uniform bevel as its cut was guided around the outline of a sole pattern resting firmly on the sheet of stock being cut.

Since the organization of the company in 1888, three machines for cutting soles have been invented and are owned by the concern. These machines are now installed in rubber footwear plants in all parts of the world where such goods are made.

In addition to sole cutting machines the company makes steel patterns for soles. This feature has increased in 1927 by more than 100 per cent over the record for 1926 and is steadily growing owing to the periodic changes of footwear styles as well as the rapid wear of pattern shapes.

In 1926 more sole cutting machines were built for foreign use than were manufactured for use in the United States. Recently the plant at Medford, Mass., was increased by 60 per cent enlargement of the floor area. The additions also provided a modern stock room where a very large amount of machine equipment is regularly carried, and also a modern pattern room and storage space for patterns.

Street Car Flooring and Upholstering

One may travel de luxe by street car in certain parts of England at present. Street cars of the Portsmouth and Southsea Corp. system are equipped with sponge rubber upholstered seats and softly carpeted with sponge rubber flooring. This flooring, it seems, is being given a trial in the Portsmouth cars and it is reported that it shows no sign of wear as yet and affords secure footing, something to be appreciated when the brakes are suddenly applied.

The buses of the Southdown Motor Service plying the South Coast also have seats upholstered with sponge rubber.

Rubber Proofing Artificial Silk

That fine cellulose fabric or so-called artificial silk merits more attention from the proofing trade than it has received thus far as a rubberizable material was recently remarked by Major A. R. Shearer, Fellow of the British Textile Institute, at a branch session of the Institution of the Rubber Industry. Of two much-used varieties, viscose, he said, was about as heat-resistant as cotton, and cellulose acetate was definitely more resistant. He was sure that the better grade artificial silk yarns made today are quite capable of standing the heat usually met with in proofing.

The silk is produced without oils or wax, it has the most regular fiber known, its section is so small that it can be made commercially three times as fine as the filament spun by the silk worm. It is moisture-absorbent, a desirable feature as much dyeing of textile yarn is done with water as a solvent. Already it has been used to some extent for waterproof garments and with rubber thread in garters and suspenders. Major Shearer felt that the artificial silk chemists would, if required, produce a material suiting most of the needs of the rubber industry, or the latter may meet the chemists half way with suitable processes. He believed that rubber-proofed fabrics would be more serviceable if the rubber layer were between two textiles, and if the inner one were of a slippery (artificial silk) character the garment would last longer and chafe apparel much less.

Answering questions, the speaker said that dyers could provide suitably fast colors, that traces of sizing or lubricants should yield readily to simple solvents, that steam would not affect viscose although it might lessen the luster of cellulose acetate, and that dry handling was preferable. He also stated that viscose ranks about 70 per cent of cotton's strength but that it is possible to make it as strong as cotton and also almost equal to silk, that copper residue in cupra-ammonium artificial silk is too faint to affect rubber, and that no anxiety need be felt about the effect of ultra violet rays on rubber proofing as the translucency of artificial silk to such rays was but from 5 to 10 per cent as compared with real silk or wool, according to United States Bureau of Standards tests.

Dr. E. A. Hauser's Course in Applied Colloid Chemistry

The course in Applied Colloid Chemistry now being given by Professor E. A. Hauser at the Massachusetts Institute of Technology has been well received by the rubber industry.

Of a total of thirty enrolled for this course, eight are actively engaged in the rubber industry. The following rubber men are taking the course: Ernst Grenquist, Fisk Tire Co.; Dorothy M. Stevens, Dewey & Almy Rubber Co.; James C. Walton, Boston Woven Hose & Rubber Co.; Stephen B. Neiley, Rubber Latex Research Corp.; U. N. Morris, Firestone Tire & Rubber Co.; H. Parigian, Cambridge Rubber Co.; John T. Blake and Donald W. Kitchen, Simplex Wire & Cable Co.

The course is divided into three parts, a series of one-hour lectures given five times a week, a two-hour seminar given once a week, where an informal round table discussion is held on colloid problems and developments, and a laboratory course wherein the most recently devised instruments are available for colloidal experimentation and research.

After outlining the fundamentals of colloid chemistry, Professor Hauser discussed the chemistry of rubber latex and rubber, showing the usages and developments resulting from the application of colloidal methods to rubber research. During the latter part of the course the cellulose, oil and other colloidal industries will be discussed.

Watch Case Vulcanizers

This is a review, in chronological order, of the patent literature relating to watch case vulcanizers, and continued from India Rubber World, July 1, 1928

JOSEPH ROSSMAN

NO. 1. Doughty, 617,414. Jan. 10, 1899. A bicycle tire vulcanizer consisting of two heated platens movable to and from each other, and a separable tire mold inserted between the platens to vulcanize the tire. After the tire is vulcanized the platens are moved apart and the mold withdrawn from between the platens, when the vulcanized tire is removed and replaced by an uncured tire. The mold consists of two annular sections hinged together at one side, and provided with rollers so that it can be moved with little effort. Means are provided for inflating the tire when the mold is inserted into the vulcanizer.

2. Ellinwood and Seiberling, 654,389. July 24, 1900. This is a system for operation and control of a plurality of bicycle tire vulcanizers. Each vulcanizer has a fixed and a movable case hinged together at one end and adapted to open and close to receive, hold and release the tires. After the tire is placed in the mold, the operations of closing, locking, applying, turning off steam and opening the press for removing the cured tire are performed automatically by clock mechanism. A number of vulcanizers are operated by the same clock which revolves a power driven shaft at a determinated speed. Independent mechanism automatically opens each vulcanizer at a definite interval after it has been closed. Thus the curing time is accurately determined and the process is arrested at the required time.

3. Seiberling and Strauss, 658,471. Sept. 25, 1900. This vulcanizing press consists of two horizontally hinged, steam heated metal casings carrying detachable mold sections for receiving a tire. The metal casings are locked together by pivoted levers, having eccentric ends that bear on the upper face of the case. The upper case is counterbalanced so that it is really opened. Steam is supplied to the metal casings as well as to the interior of the tire.

4. Seiberling, 658,472. Sept. 25, 1900. A tripartite vulcanizer for vulcanizing two tires simultaneously consisting of a fixed hollow case having a horizontally hinged case and a hollow ring hinged between the adjacent faces of the cases. Molds are retained in the ring and the cases. Fluid actuated mechanism locks the molds and opens them when the tires are vulcanized.

5. Kremer, 1,158,509. Nov. 2, 1915. Apparatus for splicing or patching a tube comprising two hinged mold sections. At one point in its circumference each section is provided with a heating chamber by means of which the portion of the tube to be vulcanized can be heated.

6. Miller, 1,234,065. July 17, 1917. This comprises a stationary hollow vulcanizing member with an annular recess to receive a tire. Another hollow vulcanizing member hinged to the stationary member is provided with an annular recess registering with that of the stationary member for receiving and holding the tire while being vulcanized. An annular ring is inserted in the tire and fits between its adjacent free edges, and a pipe secured to the annular ring introduces liquid under pressure into the tire. The vulcanizer does not have to be cooled, and another tire can be immediately placed in it while hot and the vulcanization thereof proceeded with and before the mold ring is removed from the previously vulcanized tire. For this purpose a plurality of mold rings is employed. If it is desired to vulcanize inner tubes or bicycle tires, the annular ring is not used and the pressure is introduced into the tire or tube through the air valve.

7. Tiller, 1,365,294. Jan. 11, 1921. A tire vulcanizing device comprising a fixed mold support and a horizontally pivoted mold section which is moved by a chain passing over a pulley fixed to an overhanging support.

8. Savage, 1,389,599. Sept. 6, 1921. A tire vulcanizer consisting of two complementary mold sections hinged together and provided with tire receiving grooves. The mold sections are hollow and formed with an annular steam chamber. A water chamber adapted to be heated is provided at the lower end of each mold so as to supply steam to the mold sections.

9. Earp, 1,392,487. Oct. 4, 1921. A vulcanizer for retreading tires consisting of a fixed tread mold and a pair of hinged side molds having spacing screws to hold them adjustably apart. The same vulcanizer can be used for different sizes of tires by adjusting the side molds.

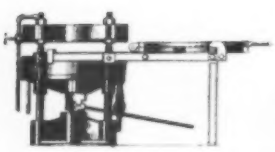
10. Williams, 1,575,025. Mar. 2, 1926. A quick locking mechanism for a watch case vulcanizer having a plurality of pivoted hooks carried by the fixed section around the periphery thereof which engage locking levers carried by the hinged sections, the locking levers being actuated by a hand wheel or fluid cylinder to open and close the vulcanizer.

11. Castonguay, 1,582,900. May 4, 1926. This consists of a movable annular mold section provided with a cavity for the heating fluid, and separate mechanism for holding the movable section against a cooperating mold section which comprises a spider arranged to close the central opening in the outer face of the movable section and having its outer engaging surface arranged to bear against the entire circumference of the movable section, and a member arranged to engage and force the spider into tight engagement with the movable section and the latter into tight engagement with such cooperating section.

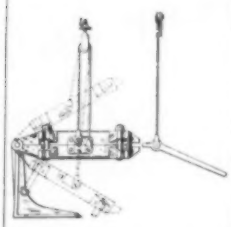
12. Flynn, 1,583,226. May 4, 1926. A double watch case vulcanizer comprising two stationary mold sections arranged back to back; two annular movable mold sections one cooperating with each of the stationary sections; a stud secured to both of the stationary sections, securing them together, and having its two ends disposed to project one through the central opening of each of the movable sections when that section is against the corresponding stationary section; and two securing means each for securing one of the movable sections in such position and each comprising quick detachable means cooperating with the corresponding stud end to hold that movable section in such position.

13. Kuhlke, 1,558,096. Oct. 20, 1925. A tire vulcanizer comprising a central vertical supporting web, two stationary chambered mold sections secured to either side of the web and hinged chamber mold sections adapted to swing against the stationary mold sections having lateral arms to carry a tire assembly within the mold, the arms being adjustable to support tire assemblies of different internal diameters. Different size tires can be vulcanized in this apparatus. This invention is also disclosed in British patent No. 251,232 Oct. 7, 1926.

14. Fairchild, 1,588,668. June 15, 1926. This is a horizontal inner tube vulcanizer comprising a pair of cooperating mold members forming a vulcanizing chamber when in contact, the members being interiorly U-shaped, the lower one having the greater internal finished heating surface, and each of them being provided with a steam chest to heat the chamber. Means are provided to supply and extract air and vulcanizing gas to and from the interior of the inner tube contained within the chamber in order to loosen it from the inner surface of the mold. This unequal division of

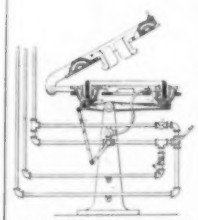


No. 617,414 Hinged mold sections inserted between heated platens.

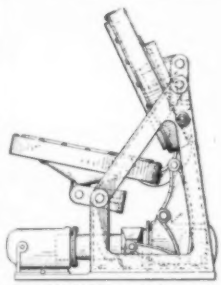


No. 1,624,343 Both mold sections swing apart.

No. 1,590,377 Mold sections swing apart and counterbalance each other.



No. 1,632,394 Can be tilted as a unit and tube connected with vacuum or fluid pressure. Lower mold section is deeper than upper.



No. 1,666,649 Two swinging mold sections which can also swing as a unit.

the horizontally disposed mold sections provides that the greater part of the vulcanizing surface within the mold is located in the lowermost section, minimizes the danger of the tube being pinched between the edges of the mold, and also facilitates the operation of placing the tube in the lower section and positioning the upper mold section upon the latter.

15. Johnson, 1,590,377. June 29, 1926. An apparatus comprising two mold units with upper and lower chambered sections, a common horizontal pivot located between the units, a rigid connection between the upper sections of one mold and the lower section of the other, whereby the sections are counterbalanced, and flexible steam connections for the sections.

16. Jacobson, 1,604,579. Oct. 26, 1926. A four unit tire vulcanizing apparatus consisting of a fixed central hollow ring having two hinged rings which are hollow and T-shaped in cross-section. The latter rings each carry another hinged ring so that four tire receiving chambers are available in one unit.

17. Fairchild, 1,606,352. Nov. 9, 1926. A quick locking tube vulcanizer having a pair of pivotally mounted mold sections, each with a plurality of inwardly and outwardly extending lugs, certain of which having cams or wedge surfaces, inner and outer locking rings located between the lugs and cams or wedge members adapted to cooperate with the cams or wedge surfaces to lock the mold sections together upon rotating of the rings.

18. Dixon, 1,606,517. Nov. 1926. A hinge joint for a watch case vulcanizer in which the knuckles on the door and door frame, instead of being in alinement, as in an ordinary joint, are arranged side by side. These links extend in a direction approximately parallel to the face of the door frame. These links provide means whereby the door may be moved in parallelism with the door frame, when the door is in its nearly-closed position.

19. Johnson, 1,624,343. April 12, 1927. A mold for vulcanizing tires comprising an upper and a lower section, a hinge pin for connecting the sections, a cable, and an overhead pulley for the cable being connected to the sections whereby they are suspended and counterbalanced.

20. Fairchild, 1,632,394. June 14, 1927. A tube vulcanizer comprising a pair of hinged complementary mold sections pivotally mounted, suction means for supplying a gas, a valve, means for connecting the valve with a tube within the mold, and mechanism connecting the mold with the valve whereby movement of the mold about its pivot in one direction will open communication between the tube in the mold and the suction means and movement of the mold about its pivot in the opposite direction will shut off communication between the tube and the suction means and open means for supplying a gas. During vulcanization the mold is held in inclined position allowing the drainage of the condensation in the upper section. This invention is also covered in British patent No. 257,914, Aug. 18, 1927.

21. Kilborn, 1,633,587. June 28, 1927. A tire vulcanizer comprising a central mold section and hinged side mold sections. An airbag rim is used on which the tire is supported for the closing of the inner side of the mold cavity during vulcanization.

22. Galvin, 1,652,473. Dec. 13, 1927. A vulcanizer comprising a stationary section on each side of which are hinged sections. To each of the mold sections is secured a bead shaping and forming ring which is formed with a flange adapted to bear against the side of the tire bead. The outer surface of the bead ring is formed with a tapered or wedge shaped surface, the airbag being formed with a correspondingly tapered inner circumference which, when the mold is closed, seats within the shallow tapered groove formed by such surfaces. The tapering of these surfaces assists in the preliminary closing operation and the positioning of the tire and airbag in the vulcanizer.

23. Fleiter, 1,658,376. Feb. 7, 1928. A watch case vulcanizer having a rotatable locking ring mounted on one of the sections, means to rotate the ring and mechanism operable upon movement of the ring to swing the section outwardly to the full extent required to gain access to the interior automatically.

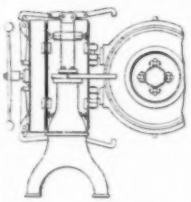
24. Harris, 1,666,649. April 17, 1928. A watch case vulcanizer mounted on a frame so as to permit a swinging movement. The mold sections are moved by fluid pressure cylinder.

This article is concluded with the following British and French patents on watch case vulcanizers.

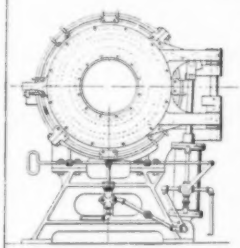
Foreign Patents

25. Dunlop Rubber Co. (British), 161,597. April 21, 1921. The apparatus comprises a piston acted upon by steam pressure to cooperate with one of two hinged members between which the tires are held in order to retain the members in closed condition. The mold parts are closed by a differential action which may be produced by relatively movable parts having surfaces of different areas, and acted upon by steam pressure to maintain the press in closed condition. The steam admitted between the two movable parts is utilized to cure the tires and if desired to expand the casings or tubes in the mold. The steam pressure which ordinarily would tend to open the mold is resisted by the member which is directly under the influence of the steam pressure and which serves to maintain the mold closed. The steam pressure within the mold may, however, be resisted by a member which is maintained in the closed condition indirectly, by the steam pressure acting on means which produce a mechanical advantage so as to exert a closing or clamping pressure on the mold shells considerably in excess of the steam pressure within the mold shells. The mold shells are hinged to permit of being swung into the closed or open positions.

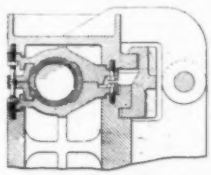
26. Dunlop Rubber Co. (British), 205,554. Oct. 15, 1923. The apparatus comprises a fixed vertically disposed steam chest and a movable steam chest adapted to be clamped in a vertical position to the fixed chest so that condensation water can be readily drained away, thus preventing unequal vulcanization of the tire enclosed between the mold shells. The movable chest may be hinged to the fixed chest, swinging on a vertical axis, the steam and draining connection for the fixed chest may be directly attached thereto while similar connections for the hinged chest may be passed through the hinges to avoid breaking and making connections when the apparatus is opened and closed. Means are provided whereby the tire may be quickly placed in or removed from the apparatus so that the sides of the tire contact with the heated surface of the mold shells for the same length of time, the said means being hand or power mechanism which avoids heavy manual labor thus increasing output. The said means comprises a hand wheel which actuates a spindle for moving the hinged chest away from the fixed chest and removes the tire from the fixed chest at the same time the hinged chest is moved out of contact with the tire by means of rods actuated by the spindle. The said mechanism also enables the tire in being placed in the apparatus to be quickly drawn towards the mold shell in the fixed chest ready to be enclosed between that shell and the mold shell carried by the hinged chest. The steam chests may be of annular form and shaped to permit ready attachment of pipes through which suitable medium may be



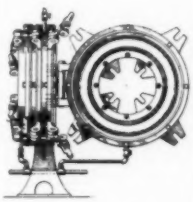
No. 1,575,025 Locked by hand wheel which releases locking levers.



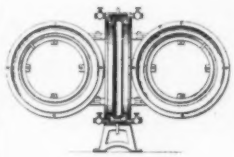
No. 1,658,376 Automatically locks and opens to the full extent by a single lever



No. 1,652,473 Eliminates the rimming operation. Each mold section has bead shaping ring which bears against side of tire bead.



No. 1,633,587 Air bag rim closes mold cavity.



No. 1,392,487 Adjustable tire retreading vulcanizer.

supplied to an airbag within the tire cover or to the interior of the cover itself for subjecting the cover to internal pressure during vulcanization. French patent No. 567,217, Dec. 3, 1923, and German patent No. 404,222, Oct. 16, 1924, cover the same invention.

27. Barre, 212,565. Nov. 27, 1924 (British). This invention relates to vulcanizing apparatus for remolding pneumatic tire covers. The particular object is to keep in a cool state that part of the cover which does not need to be repaired. The invention provides for a shape retaining member substantially corresponding in form with the inner wall of the cover and adapted to carry the fluid pressure chamber, said shape retaining member preventing undamaged parts of the cover from contacting with hot parts of the mold. The apparatus consists of a fixed and a vertically hinged complementary mold, both being steam heated. The molds are shaped to engage the tread portion only so that the remaining parts of the tire are not heated. The same invention is disclosed in French patent No. 574,650, April 3, 1924, and Swiss patent No. 108,316, Jan. 16, 1925.

28. Dunlop Rubber Co. (British), 257,646. Sept. 6, 1926. Two annular chests are securely locked together while the tire is curing. There is associated with the locking gear means whereby fluid pressure may be admitted to the interior of the tire only after the chests are locked, and further to prevent the chests being opened before the fluid pressure is released from the tire. The locking means comprises an annular member rigidly secured to one of the chests and provided with wedges adapted to be engaged by similar opposing wedges upon an annular member rotatably mounted upon the other chest. The latter ring is actuated by a hammer ring which is actuated by a handle, which has a projection actuating the valve mechanism.

29. Société des Procédés "Fit" (British), 257,883. Nov. 18, 1926. This relates to an apparatus for repairing tires of all types by vulcanizing new treads thereon. It comprises a pair of pivoted steam heated half molds. In order to give a uniform pressure upon the tire there is used a hinged pressure device constituted by an expansible rim formed of overlapping elastic plates respectively secured to shoes mounted on radial arms pivoted to one or the other of two hubs cooperating with a screw having right hand and left hand threads, the screw being supported by the mold. The same invention is covered in French patent No. 603,354, Jan. 8, 1926.

30. Société des Procédés "Fit" (British), 260,299. Mar. 3, 1927. A machine similar to patent No. 257,883 in which the successive plates constituting the expansible rim overlap each other for a short distance and are longitudinally guided upon each other, forming a rim continuous both on its outer periphery and sides. Each rim plate is adapted to pivot about a transverse axis with respect to the shoe upon which it is mounted. The inner ends of the shoe carrying arms, extend through slots provided in the corresponding hub and are pivoted to the latter by an annular axle pin disposed within a corresponding groove formed in a side face of the hub and held therein, for instance, by a counterplate.

31. Dunlop Rubber Co. (British), 272,992. June 22, 1927. The object of this invention is to provide means for securely clamping together the two hinged chests while the tire is undergoing vulcanization and to afford means for supplying fluid pressure to the tire interior. Also to ensure that fluid pressure is within the tire when the apparatus is closed, that pressure is within the tire only when the apparatus is closed, and that pressure is released before it is opened. The clamping means comprises a unit including a hinged girder bracket provided with a pivotal lever adapted to actuate a cam, thus exerting a contracting pressure between the steam chests. The fluid pressure control comprises a rotatable annular member which actuates the fluid pressure valve, the member being provided with projections that coact with opposing projections upon the cam clamps and prevent admission of pressure to the product when the clamps are in the inoperative position, and the operation of the clamps to open the apparatus before the member is rotated to exhaust pressure from the product. The control comprises means whereby the actuation of the valve is consequent upon the actuation of the pivotal lever, preferably however, only in admitting pressure to the tire. The operation of the lever being preferably consequent upon the prior actuation of the valve in exhausting pressure from the product.

32. Dunlop Rubber Co. (British), 273,782. June 27, 1927. An apparatus for vulcanizing tires and inner tubes consisting of two horizontally hinged mold halves. A new type of breaking spindle operated by a hand wheel and gearing separates the mold. At the end of the spindle remote from the end which contacts the hinging chest is rigidly affixed a flange or platform. Between the platform and bracket that supports the spindle is a helical compression spring which is compressed as the platform approaches the bracket as the spindle is actuated. When the chests have been sufficiently separated the hand wheel is released and the pressure exerted by the spring between the bracket and the spindle platform causes the spindle to be withdrawn into its original position. The thread upon the spindle is of the kind known as multi-start threads.

33. Akron Standard Mold Co. (British), 277,851. Sept. 29, 1927. This apparatus comprises stationary and vertically hinged mold members adapted to be brought in contact, one of them preferably the stationary one, having a ring rotatably mounted thereon, which carries mold locking and breaking formations, such as cams and lugs cooperating with mold locking and breaking formations on one of the mold members, preferably the movable one, and cooperating further with means, preferably fluid pressure, for rotating the ring in opposite directions. Fluid pressure means are used to control the movement of the rotatable rings. The valve for the pressure is coordinated and combined with a valve for the control of air to the interior of the tire or tube within the mold so that air is admitted only after the mold is clamped in position and so that the air is exhausted before the clamping ring is moved to unlocked position. This device is automatic in its operation so that the operators cannot make a mistake in the sequence of operations. The rotatable ring is used not only for clamping the swinging mold sections against the stationary mold section, but also for the purpose of opening or "cracking" the molds. This is accomplished by a cam upon the locking ring which contacts with a lug on the swinging mold section. French patent No. 627,747, June 14, 1927, discloses the same invention.

34. Burch (French), 616,965. Nov. 8, 1926. Apparatus for retreading tires comprising two pivoted mold sections which engage only the tread portion of the tire without heating the remaining portions of the tire. The same invention is disclosed in Swiss patent No. 121,156, June 16, 1927.

35. Macbeth (French), 628,063. June 21, 1927. Apparatus for vulcanizing tires comprising two horizontally pivoted mold sections which swing apart free of the tire between them. The bead clamping rings are supported on lugs pivoted on the lower mold section. The mold sections are moved apart by pivoted levers which also serve to lock the mold sections together.

EDITORIALS

Basis of Tire Prosperity

FROM time to time the question is raised, "Is our tire prosperity on a basis so substantial that we may well dismiss all doubt as to its orderly continuance?" Evidently there is no good reason for believing that the tire industry is in any other than a sound condition, nor need we have any misgivings as to the future. This billion-dollar business was never so well intrenched, never so ably managed as now. Here the economist finds as a primary essential for its success the remarkably universal and ever-growing desire to ride and an individual eagerness to own and operate self-propelled vehicles for personal and industrial transportation unparalleled in history. He finds that desire being gratified to such an extent by manufacturers that over 20,000,000 automobiles course over American highways, and American cars and trucks grow more numerous abroad, over 500,000 having been shipped overseas in 1927.

Nearly all carrying five tires, those cars require at the outset some 95,000,000 casings and just as many inner tubes. Nor is account taken here of the great tire replacement demand now mounting into millions of units. Of no small consequence to the tire industry is the more general policy of car makers to augment their sales with fewer models and greater mass production, making car purchasing easier by lessening first and final costs. The tire industry, too, has been doing a lot of standardizing, ridding itself of many barnacles in business, and the end is not yet. Nor should the present and probably future moderate price of crude rubber be overlooked in recounting the factors favorable for the well sustained success of the tire industry.

The pessimists will still contend that we must be nearing the limit of national absorption, that the old bugbear of motor car saturation has not been killed but merely scotched. Certainly there is a limit to home consumption, but it is not as near as some may fear. The fearsome ogre can be easily kept at bay if a little wisdom be exercised and the advice of the forward-looking be heeded. One of the largest tire makers in the country recently expressed the opinion that prudence may soon require control of mass production, that it might even stall through being forced beyond national buying power; and that the only rational way to avert any such impasse was rather in promoting the purchasing capacity of the people than in urging sales under high pressure. Recently, too, the head of one of the greatest automobile-making concerns in the world advised against too close an adherence to the custom of setting ever rising annual quotas, counseling rather the abolition of arbitrary increases and the adjustment of manufacturing strictly to legitimate demands.

Such timely recognition by captains of industry of the hazard of letting production outstrip consumption is encouraging, and can not help having a wholesome influence on those who might otherwise let their optimism get the better of their judgment. Basic conditions in the tire industry are inherently sound, and there is no reason why they should not long continue thus; but reason must rule enterprise and enthusiasm, and to bring about a consummation so devoutly to be wished, to broaden its basis and to make the tire industry well nigh impregnable, nothing should be more helpful than such an impartial regulatory agency as the new Rubber Institute.

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Cost of Producing Rubber

AN analysis of the reports of thirty British rubber planting companies published in May and June shows a variance in the cost of producing crude rubber that can not but mystify many buyers of the commodity. Soil, climatic and industrial conditions for all those far eastern tropical agriculturists are, or should be practically, the same and yet some striking differences are noted. For instance, in 1926 the highest all-in cost cited was 17.01 pence and the lowest 6.76 pence. For the same year the highest f. o. b. cost cited was 11.41 pence and the lowest 5.42 pence. For 1927 highest all-in cost was 13.89 pence, lowest 8.78 pence; and highest f. o. b. cost was 11.88 pence, lowest 6.02 pence. It would be easy to strike average costs from the report figures, but that would shed no light on the question of most interest. Why does it cost some planting companies nearly twice as much as others to obtain the same product?

The easiest guess is that the concerns with the high costs are the small estates and those least efficiently managed. It was, however, a 1,400-planted-acre estate that had the low of 5.42 pence and 6.02 pence figures aforementioned; and a 5,942-planted-acre estate well rated for efficiency that had the high 11.41 pence and 11.88 pence f. o. b. figures. But thrift surely counts. It was a Scottish company that scored the lowest all-in costs, 6.76 pence and 8.78 pence, and that could clear a nice profit with rubber at the recent price of 10 pence.

* * *

BECAUSE some regenerators give buyers more than they bargain for, a French critic objects to the term reclaim and as a substitute suggests, *caoutchouc approximatif*. Never would be popular. If the term must be changed, a cue might be taken from used car dealers and reclaim styled, ***repossessed rubber***. Might help the price, too.

What the Rubber Chemists Are Doing

The Nature of Vulcanization. Part III[1]

HENRY P. STEVENS

THIS report of the author's extended study of vulcanization is reprinted with omission of the experimental details for lack of space.

An outline of the theories which have been put forward to account for the changes in the physical and chemical properties of rubber which take place during vulcanization was set forth in two papers on this subject[2]. The results obtained leave no doubt that a chemical change, that is combination with sulphur, etc., invariably accompanies the physical change. Both changes take place gradually and move forward by imperceptible stages.

The smooth character of the curves obtained by plotting the sulphur combined with the rubber against the time of heating shows that the formation of intermediate caoutchouc sulphides is improbable, but the tendency to form limiting compounds of the empirical formulas C_5H_8S and C_5H_8SCl naturally suggests that soft vulcanized rubber consists of an intimate association of particles of raw rubber C_5H_8 and the sulphides C_5H_8S and C_5H_8SCl according as the rubber is hot or cold-cured.[3] If this be so, vulcanized rubber will consist of two phases, a soft plastic phase consisting of raw rubber, and a hard rigid phase consisting of the sulphide C_5H_8S. The latter may take the form of rods or plates, and so more effectively enclose the particles of raw rubber.

Such an hypothesis is in harmony with new theories regarding structure of colloids.[4] If vulcanized rubber is assumed to have this composite structure, it follows that the physical properties will show a gradual change with the diminution of the plastic phase and the increase of the rigid phase, that is to say, the rubber will stretch less and become more rigid with increase in combined sulphur in accordance with the well-ascertained facts. Or, taking the action of "solvents," the plastic soluble phase will be protected from dispersion in solvent by the rigid insoluble phase in accordance with the amount present and degree of dispersion; the larger the proportion and the greater the dispersion the greater the protection likely to be afforded and the less tendency to sol formation and to swelling in a solvent. Thus, rubber vulcanized with sulphur in the heat without an accelerator cannot be dispersed in benzene when the amount of combined sulphur exceeds approximately 0.5 per cent; this corresponds to about 1.5 per cent of caoutchouc sulphide.

A parallel example in which the rigid phase is of a coarser structure is given by an "unworked" rubber such as smoked sheet or fine Para immersed in benzene. The protein films forming the rigid phase hinder dispersion of the plastic phase, and although partial dispersion of the caoutchouc eventually takes place, the swollen mass remains distended and continues in this condition indefinitely.[5] The amount of protein will not exceed 2 to 3 per cent of the weight of rubber, and it is evident that with a finer structure the protection afforded will be correspondingly greater.

This leads to the next point—the possibility of variations in the physical properties of a vulcanizate containing the same percentage of combined sulphur, that is the same percentage of the caoutchouc sulphide forming the rigid phase. Such variations are a fact, the same percentage of combined sulphur producing a greater effect in a vulcanizate containing zinc oxide and a still greater effect in one containing an accelerator. That is to say, whereas a fully cured rubber requires a coefficient of 3 to 3.5 for a simple mix of 100 parts of rubber and 10 parts of sulphur, a coefficient of 2.5 suffices in a mix consisting of 60 parts of rubber, 3 parts of sulphur, and 47 parts of zinc oxide, and a still smaller coefficient of 1 or even less suffices in a mix consisting of the last-mentioned with the addition of 1 per cent of zinc diethyl-dithiocarbamate. It is reasonable to assume that the size, shape, and uniformity of the distribution of the rigid phase will be determined by the conditions of vulcanizing, particularly the rate of combination of rubber and sulphur, and the temperature. The process may be regarded as somewhat analogous to the formation of a precipitate by the interaction of soluble salts or the separation of crystals in a concentrated liquor, or to the separation of free sulphur from a vulcanizate on cooling when the rubber is no longer capable of holding in solution the amount of sulphur it took up at vulcanizing heat. On the size, shape, and distribution of the particles of the rigid phase will depend the physical properties and behavior to "solvents" of the vulcanizate. It is, therefore, possible to have two or more vulcanizates with the same coefficient, but with different physical properties, by suitably modifying the vulcanization process to cause a difference in the size, shape, or distribution of the rigid phase.

Thus, if vulcanization is effected at a lower temperature or in a shorter time by means of an accelerator, the particles of caoutchouc sulphide, or polyprene sulphide as Weber termed it, will be smaller or the shape will be altered, or generally the rigid phase will be more completely dispersed in the plastic phase, with the result that the physical effect of vulcanization is enhanced, or, alternatively, a similar physical condition is obtainable with a smaller proportion of combined sulphur when more completely dispersed. This theory, therefore, offers an explanation of the different physical effects obtainable with the same coefficient of vulcanization as, for instance, with and without the use of vulcanization accelerators, or with different accelerators in different proportions under the same conditions of cure.[6] The phenomenon of reversion can be explained in a similar manner (see Twiss, *loc. cit.*, 107 T).

Summary and Conclusions.

The above recorded experiments indicate that an intimate mixture of raw rubber and vulcanized rubber that is, rubber containing sulphur chemically combined with it, results in a product which behaves substantially in the same manner as a rubber vulcanized to a proportionally less degree. In other words, a rubber vulcanized to a coefficient of say 2 units and mixed with an equal quantity of raw rubber yields a product having substantially the same physical properties as a rubber directly vulcanized to give a coefficient of one unit in one operation. This always provided that the vulcanizing is carried out in the same manner in both cases, that is, to yield a dispersion in which the particles of caoutchouc (or polyprene) sulphide may be expected to be of a similar size, shape, and distribution.

From this the conclusion may be drawn that there is no essential difference between that part of a vulcanized rubber which remains uncombined with sulphur and the raw rubber from which the vulcanized rubber was produced. In the case of the experiments with sols vulcanized with sulphur chloride, a very intimate mixture of the vulcanized sol and raw rubber was obtainable, al-

[1] *J. Soc. Chem. Ind.* Feb. 10, 1928, pp. 37T-43T.

[2] *J. Soc. Chem. Ind.*, 1919, 38, pp. 192 and 196T.

[3] Twiss, *J. Soc. Chem. Ind.*, 1925, 44, p. 106T. *India Rubber J.*, 1923, 65, p. 607.

[4] Bradford, "The Physics and Chemistry of Colloids," sect. ii, p. 44, 1921. H. M. Stationery Office.

[5] I have such samples which have remained unchanged for several years.

[6] N. A. Shepard and S. Krall, *J. Ind. Eng. Chem.*, 1922, 14, p. 951, who obtained, as would be expected, different vulcanization coefficients with different accelerators added in such proportions as to give the same state of cure.

though the readiness with which gelling takes place with only small amounts of sulphur chloride combined with rubber in spite of considerable dilution makes it very difficult to follow the results into the region of a well vulcanized product.

On the other hand, the dispersion of the caoutchouc sulphide in the rubber obtained from a mixture of raw and vulcanized latices is relatively coarse, as with complete admixture of the two the whole of the caoutchouc sulphide may be expected to be retained in the vulcanized latex particles. The product of the mixed latices therefore would appear to consist of a conglomerate of minute particles with caoutchouc sulphide dispersed in them and similar particles without. Yet the behavior of this conglomerate when swollen in benzene or subjected to load stretch tests is substantially the same as that from vulcanized latex alone with a corresponding coefficient.

Less stress is laid on those experiments in which solid particles such as cellulose are dispersed in rubber as a result of adding viscose to rubber latex, although the results indicate that a dispersion of cellulose in rubber resembles one of caoutchouc sulphide in rubber. The analogy cannot be carried experimentally to the same limits, and differences in properties obtained by the different methods of "vulcanizing" are apparent.

The above recorded experiments were some years in progress, but were completed and written up substantially as given above in 1925. Publication was unavoidably delayed, and since they were completed new theories have been advanced, particularly in Germany. These theories are based on a physical as opposed to a chemical theory of vulcanization. It is admitted that chemical combination takes place, and Dr. Hauser in a recent lecture stated that vulcanite was to be regarded as a definite chemical combination of rubber and sulphur. Soft rubber, however, he regards as not containing sulphur in chemical combination with rubber.

If this is so, sudden combination of rubber and sulphur must take place at an advanced stage of vulcanization, and such sudden change should produce an equally sudden change in the properties of vulcanite. As is well known this is not so, rubber passing into the hard rubber stage by imperceptible degrees. P. Schidrowitz has summed up the views generally held in the following words:[1] "I imagine that the great majority of rubber chemists—I will not speak for the physicists—nowadays look upon vulcanization as a physical process, and regard the binding of sulphur by the molecule as incidental and not characteristic."

The close association of coefficient of vulcanization with the physical properties when vulcanizing under the same conditions, namely, in the absence of zinc oxide and artificial accelerator, or in the presence of definite proportions of such ingredients, are apparent, although the two series are not interchangeable. The difference in the two series can be readily explained by the theory which has been outlined. Consequently, the chemical combination of rubber and sulphur is not merely incidental. On the contrary it appears to be the basis of the physical changes brought about by vulcanization modified by the degree or state of dispersion of the product of such chemical combination.

The dispersion medium, that is, the rubber before vulcanization, is not necessarily homogeneous and may undergo some change as the result of vulcanization. It would not be wise to exclude such a possibility, but it is entirely conjectural and not necessary to the hypothesis which has been put forward. It is also possible that other more complex polyprene sulphides exist, that is, additive compounds such as C_8H_8,C_5H_8S. Some such assumption may be necessary to explain the existence of a brittle stage in the progressive vulcanization of rubber.

[1] *I. R. J.*, 1927, 64, p. 802.

Society of Chemical Industry

The British Society of Chemical Industry will hold its Annual Meeting this year at New York City, September 3 to 8. The final program will be ready for distribution about September 1 and may be had at that time by addressing J. W. H. Randall, 50 East 41st St., New York, N. Y.

Colloid Chemistry of Rubber

In his lecture at the seventh colloid symposium held in Toronto, Professor E. A. Hauser gave a short historical survey on the work done in the lines of microscopical observation of vulcanization. Special reference was made to the work of C. O. Weber, Breuil, Lowen, Dannenberg and Regnaud. He then described a new method devised by him in collaboration with his assistant Miss M. Huenemoerder enabling one to follow vulcanization under the microscope using a steam heated micro-vulcanizing press. This apparatus can also be used with advantage for purposes not connected with rubber, i. e. cellulose, alloys, etc.

Based on this apparatus, Dr. Hauser in collaboration with Dr. Miedel and Miss Huenemoerder has carried out a certain amount of work in regard to the vulcanizing properties of rubber purified and fractioned according to the method of Pummerer with results briefly as follows.

The insoluble fraction of purified rubber as well as the soluble fraction will not vulcanize unless minute traces of an acetone extractable oxidized product are present. The astonishing fact is, that this substance can only be removed after fractioning has been accomplished. It has been possible to obtain corresponding results by the addition of small amounts of oxidized rubber.

The vulcanization of rubber in the presence of zinc oxide and accelerators was also discussed and the differences in the reappearance of the sulphur after completion of cure were emphasized. Of all the accelerators thiuramdisulphide shows a typical effect, the sulphur reappearing in half-moon like crystals, which link up into bundles.

The lecture certainly throws new light on our comprehension of vulcanization in general. It was accompanied by a series of extraordinarily distinct microphotographs, taken with the new Leitz-Leika microphotographic outfit.

Dr. Hauser expressed his regret for not having been able to bring a motion-microphoto along. One will, however, be shown for members of the Rubber Division of the American Chemical Society at the Massachusetts Institute of Technology during the Swampscott meeting. Instead he demonstrated a very interesting model of the molecular chain of isoprenein rubber. This model which is elastic in itself explains all the results so far obtained by x-ray research in regard to structure and is a vivid explanation of the Hauser-Mark theory. It was made by Dr. H. Fickentscher in Professor Mark's laboratory in Germany.

September Meeting of American Chemical Society

Indications are that more than 2,000 chemists and scientists will attend the fall meeting of the American Chemical Society, September 10 to 15, at Swampscott, Mass., twelve miles from Boston. Registrations may now be made at the two hotels chartered by the society, the New Ocean House and the Hotel Prescott; headquarters will be at the first and the second will be used by members of the Rubber Division and by others. It is urged that those who come by automobile stay at the Hotel Rock-Mere at Marblehead. Rooms in private houses may be engaged through Raymond S. Stevens, 30 Charles River Rd., Cambridge, Mass.

Among other features, the entertainment committee has arranged sightseeing trips for Tuesday and Wednesday, the formal banquet for Wednesday evening, a visit to Harvard University Thursday afternoon, and an all-day North Shore trip on Friday.

Accelerator A-32

Accelerator A-32 recently announced, is an aldehyde derivative of a Schiff's base. It has approximately the same critical temperature as A-16 but is less retarded by carbon black or clay. It does not have quite as flat a curing curve as the other members of the series but gives slightly higher tensiles and greater stiffness. It darkens stocks very little and while not suitable for white rubber may be used in those fairly light in color.

American Rubber Technologists

THE INDIA RUBBER WORLD'S *brief biographies of American rubber technologists are valued by our readers because they record the accomplishments of the men in charge of the research, development and control work of the rubber manufacturing industry.*

Technical superintendents, chemists, process and development engineers in rubber manufacturing and reclaiming plants, research, testing and service laboratories are invited to send their biographical data to us for publication.

H. E. SIMMONS, chem. *b.* 1885, Leroy, O.; Buchtel Coll., Akron, O., 1908; M. S., U. of Pa., 1912; asst. prof. chem. Buchtel Coll., 1906-1908; inst. qual. anal., U. of Pa.; prof. of chem., Buchtel Coll., since 1910. *Author:* "Rubber;" "Use of Organic Accelerators in Rubber." *Member:* Phi Eta; Rotary Club; Am. Chem. Soc., Sec.-Treas. Rubber Division; German Chem. Soc. *Address:* U. of Akron, Akron, O.

Robert Maxwell Sanderson, supt. *b.* Oct. 13, 1876, Hamilton, Ont. Grade schools; washing, mill, calender and salvage depts., B. F. Goodrich Co., Akron, O., 1908-1919; supt. Amazon Rubber Co., Akron, O., 1919-1923; branch mgr. India T. & R. Co., Akron, O.; supt. Grubb Rubber, Wadsworth, O., until November, 1927. *Member:* Knights of Pythias; White Anchor of The B. F. Goodrich Co.; Knights of Khorassans. *Address:* 359 Carroll St., Akron, O.

James R. Caldwell, engr. *b.* Sept. 28. 1896, Thompsonville, Conn.; Georgetown U., 1916, Trinity Coll., 1918; lab. and indus. engr., Fisk Rubber Co., 1916-1919; asst. supt. 1919-1921; facty. mgr., Seamless Rubber Co., since 1921. *Member:* Civitan International Asso. *Address:* Seamless Rubber Co., New Haven, Conn.

Perley D. Hammond, supt. *b.* 1883, Canaan, Vt., Colebrook Acad., 1900, Burdett Business Coll., Boston, Mass., 1902-1903; last and shoe construction depts., Hood Rubber Co., 1903-1910; mgr. boot and shoe dept., B. F. Goodrich Co., Akron, O., 1911-1916; mgr. boot & shoe dept., Firestone T. and R. Co., Hudson, Mass., 1917-1918; mgr. production dept., Faultless Rubber Co., Ashland, O., 1918-1919; supt. Panther Rubber Co., Stoughton, Mass., 1919-1923; supt. and compounder, Kleistone Rubber Co., Warren, R. I., since 1923. *Address:* 54 Washington St., Warren, R. I.

William G. Lerch, engr. *b.* Nov. 19, 1878, Rowsburg, O.; Wooster U., Wooster, O.; cost dept., Carnegie Steel Co., Pittsburgh, Pa., 1896-1899; cost dept., H. K. Porter Co., Pittsburgh, Pa., 1899-1902; cost dept., B. F. Goodrich Co., Akron, O., 1902-1907; asst. supt. Miller Rubber Co., Akron, O., 1907-1919; fact. mgr. and vice pres. India T. & R. Co., Akron, O., since 1919. *Author:* Various patents on machinery and processes used in manufacturing pneumatic tires, heels and other rubber articles. *Member:* Masons, Fairlawn Heights Golf Club. *Address:* 191 North Highland Ave., Akron, O.

Claude D. Mason, chem. *b.* Oct. 3, 1882, New Lebanon, Ind.; A.B., Pacific U., Forest Grove, Ore.; U. S. Food and Drug Lab., Portland, Ore., 1908-1909; state chem. of Idaho, 1909-1913; chem. Rubber Regen. Co., Mishawaka, Ind., 1913-1914; chem. staff, Gen. Labs. U. S. Rubber Co., New York City, 1914-1915; chem., Goodyear Metallic Rubber Shoe Co., Naugatuck, Conn., 1915-1917; chem. in charge of analytical laboratory, Gen. Labs. U. S. Rubber Co., New York City, 1917-1923; chf. chem. Mishawaka Rubber & Woolen Mfg. Co., Mishawaka, Ind., since 1923. *Member:* Am. Chem. Soc., Masons. *Address:* 944 Homewood Ave., Mishawaka, Ind.

Oscar F. Loeffler, engr. *b.* Mar. 6, 1889, Milwaukee, Wis., M. A., Milwaukee Academy, 1903; M. A., U. of Wis., 1908; Milwaukee Drug Co., 1912-1913; stock clerk, Western Mfg. Co., Chicago, Ill., 1913-1914; sec. & treas., Federal Rubber Co., since 1914, also manager of production 1916-1928. *Address:* Fisk Rubber Co., Cudahy, Wis.

Herbert R. Polleys, engr. *b.* Jan. 21, 1895; Phillips Exeter Academy; S. B., M. I. T., 1918; designer of aircraft, Gallaudet Aircraft Corp., 1917; exper. engr. and mach. development, U. S. Rubber Co., since 1919. *Author:* Patents on footwear; various technical articles. *Member:* Sigma Alpha Epsilon; New Haven County Technology Club. *Address:* Box 606 in care of U. S. Rubber Co., New Haven, Conn.

Roswell D. Ratz, engr. *b.* Jan. 21, 1896, Elmira, Ont., Can.; B. A. Sc., U. of Toronto, 1917; lab. Marshall Test. Lab., Toronto, Can., 1917-1918; lab. Canadian Inspection & Testing Co., Montreal, Can., 1919; asst. supt. Montreal factories Dominion Rubber Co., Ltd., 1919-1923; tech. supt., Dominion Rubber Co., Ltd., Kitchener, Ont., since 1923. *Member:* Inst. Rubber Ind., A. S. T. M. Committee on Textiles, Am. Chem. Soc. *Address:* 22 Dill St., Kitchener, Ont.

Egbert Warren Laub, chem. *b.* July 5, 1903, Beaver City, Neb.; A. B. Stanford U., Calif., 1927; post graduate work organic chem., Dec., 1926-June, 1927; factory depts. Coast T. & R. Co., 1925-1927; chf. chem., 1927-1928; vice pres. and chem. since Jan., 1928. *Address:* 2828, 61st Ave., Oakland, Calif.

F. Dudley Chittenden, chem. *b.* Aug. 11, 1902, New Haven, Conn. B. S., Sheffield Sci. Sch., Yale U., 1923; Ph.D., Yale U. graduate school, 1926; lab. asst. dept. of chem. Yale, 1923-1925; research chem. Gen Lab. U. S. Rubber Co., since 1926. *Member:* Am. Chem. Soc., Sigma Xi, Alpha Chi Sigma, Gamma Alpha. *Address:* Gen. Lab. U. S. Rubber Co., 2nd and South streets, Passaic, N. J.

Omar Harrison Smith, chem. *b.* 1888, Shelocta, Pa.; B. S., Bucknell U., 1915; research chem. Gen. Lab. U. S. Rubber Co., since 1915. *Author:* Patents on vulcanization accelerators, latex preservatives and thermoplastics. *Member:* Am. Chem. Soc. *Address:* 1287 Pennington Rd., W. Englewood, N. J.

Roscoe Harlan Gerke, phys. chem. *b.* Dec. 1, 1895, Highland, Ill.; B. S. U. of Ill. 1918; Ph.D., U. of Calif., 1922; instructor phys. chem. M. I. T., 1922-1926; research chem. Gen Labs. U. S. Rubber Co., since 1926. *Author:* Numerous papers on physical chemical subjects. *Member:* Am. Chem. Soc., Sigma Xi, Phi Lambda Upsilon. *Address:* Gen. Lab., U. S. Rubber Co., 2nd and South streets, Passaic, N. J.

Ernest J. Joss, chem. *b.* Feb. 28, 1903, Anaconda, Mont., A. B., U. of Okla., 1922; M. A., U. of Kan., 1924; Ph.D., Cornell U., 1926. Research chem. Gen. Lab., U. S. Rubber Co., since 1926. *Author:* Papers on physical chemistry. *Member:* Alpha Chi Sigma, Sigma Xi, Delta Upsilon. *Address:* Gen. Lab. U. S. Rubber Co., 2nd and South streets, Passaic, N. J.

William Sherman Johnston, chem. *b.* Jan. 25, 1893, Brooklyn, N. Y.; Horace Mann School, New York. B. S., 1915; Ch. E., Columbia U., 1917; Dorr Co., 1917-1918; C. W. S., 1918-1919; Air Reduction Co., 1919; gen. research chem. engr. Gen. Labs. U. S. Rubber Co., New York, since 1919. *Member:* Alpha Delta Phi, Tau Beta Pi, Sigma Xi, Am. Inst. Chem. Engrs. *Address:* 542 West 112th st., New York, N. Y.

George W. Jargstorff, chem. engr. *b.* Feb. 22, 1902, New York City; B. S. 1923, ch. E., N. Y. U., 1925; chem. McKesson & Robbins, 1923; research chem., Gen. Lab. U. S. Rubber Co., since 1923. *Address:* 10 Tonawanda Rd., Glen Rock, N. J.

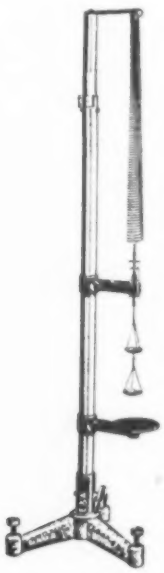
John McGavack, chem. *b.* Feb. 10, 1893, Waterford, Va.; private school, 1900-1908; Paeonian Springs High School, 1908-1910; A. B., Hampden Sidney Coll., 1910-1913; Ph.D., Johns Hopkins U. 1920; asst. principal, Charlestown High School, Charlestown, Va., 1913-1916; 2nd Lieut. C. W. S., 1917-1918; research chem. Gen. Labs. U. S. Rubber Co., New York, since 1920. *Author:* Numerous papers and patents on rubber and related matters. *Member:* Gamma Alpha, Phi Beta Kappa, American Chemical Society. *Address:* Second and South streets, Passaic, N. J.

Russell A. Hayworth, chem. engr. *b.* Dec. 1, 1893, Edinburgh, Ind.; B. S., Purdue U., 1917; engr. of tests, U. S. A. Ordnance, 1917-1918; develop. dept., Goodyear T. & R. Co., Akron, O., 1919-1922; chf. chem., Goodyear T. & R. Co. of Canada since 1922. *Member:* Amer. Chem. Soc., Masons. *Address:* 81 Robert St., Mimico Beach, Ont.

New Machines and Appliances

Specific Gravity Balance

TAKING specific gravities of rubber stocks is daily routine in most cost departments and rubber control laboratories. Various means are employed for such simple but important determination. Unless the instrument used affords accurate results it is simply worse than useless. The familiar Jolly spring balance is accurate but as originally made it is not as convenient to operate as desirable for quick determinations. In its improved form it is well suited for specific gravity work. The new precision type Jolly balance is constructed with telescoping tubes, the inner one being moved upward or downward by an internal rack and pinion operated by a knurled thumb screw located at the side near the bottom. The inner tube is graduated for a length of 50 cm in 0.1 cm, while the outer tube is provided at the top with a vernier, past which the scale on the inner tube slides, enabling the instrument to be read to 0.1 mm. Oscillations of the spring are damped by stops striking the ends of the glass tube within which the index moves. A hair line is etched around the glass tube, with which the middle one of the three lines on the index can be readily brought into coincidence, enabling accurate and rapid settings to be made. The inner tube has a range of motion of 50 cm, which, by the proper choice of a spring, permits the use of this balance for a wide range of specific gravities. The balance is very substantially made and nicely finished, with nickel plated tubes mounted on a tripod base of japanned iron provided with leveling screws. It is provided with light and heavy spring, special indicator and stops, adjustable platform, aluminum and glass pans. Eimer & Amend, Third Ave., 18th to 19th Sts., New York, N. Y.



Improved Jolly Balance

Roller-Bearing Pillow Blocks

THE power loss encountered in every factory due to misalinement of shafting may be effectually eliminated by the type of self-alining pillow block as is here pictured. These roller bearing pillow blocks are used where the loads are too heavy and the service too severe to permit the use of ball bearings. They are equipped with adapter bearings to fit standard commercial shafting sizes up to 3 inches diameter, and with special adapters to fit larger size shafting.

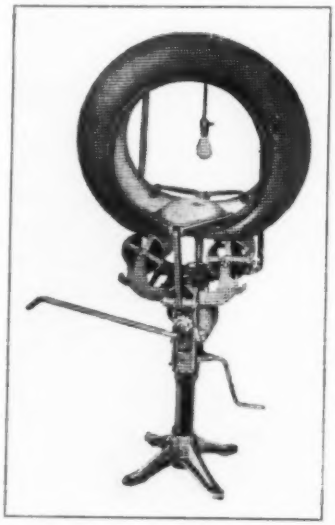
The bearings have rollers and races made of chrome carbon alloy steel, heat treated, giving uniform hardness throughout the piece and insuring dependable service of the bearings. Self alinement is secured in the machined ball and socket contact between the bearing housing and the base and cap, leaving the roller bearings free to carry the load without complications. The self-alining housing permits much more efficient sealing against entrance of dirt and exit of lubricant, than is possible when a fixed housing and a self-alining bearing are used, as in the latter case enough clearance must be left between shaft and housing to provide for such misalinement that may occur in service.

The use of the long adapter projecting through the housing covers, permits adjustment of the bearing on the shaft and tightening of the adapter, without opening the bearing housing, thus avoiding danger of getting dirt into the bearings when adjusting or tightening the adapters. Rollway Bearing Co., Inc., Syracuse, N. Y.

Self-Alining Pillow Block

Pneumatic Tire Inspection Machine

IN every tire plant a good tire spreader is essential for prompt and careful tire inspection. One of exceptional merit is the new "5 in 1" tire spreader. By it any tire, including the largest size heavy duty truck tire, is quickly opened for inspection, the center of the tire being raised as shown in the accompanying picture. The spreading movement is horizontal, thereby eliminating all possibility of distortion or injury to the bead.



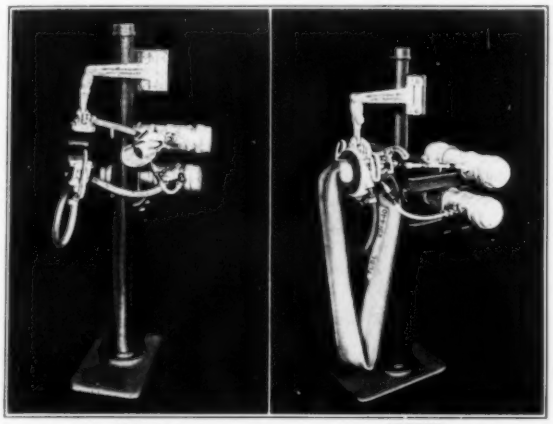
Ramsdell Tire Spreader

The spreading is accomplished with a specially designed cam that gives the leverage required to open heavy duty tires. The spreader hooks are widespread, permitting bead repairs to be made between them. The back rest is so situated that repairs are made from either side of the machine. The center lift device is operated by a fast moving screw and, when not in use, sets down between the rollers out of the way. The rollers are unusually large to permit easy rolling of the tires. All castings are of semi-steel and the machine is designed to meet the most severe conditions and give many years of satisfactory service.

In operation, a quarter turn of the handle makes it possible to inspect more than half the tire. After an injury is discovered, the lever is locked in position with a safety ratchet and the tire is ready to be worked upon. There is a fast operating center lift attachment which raises the center of the tire when so desired for cutting down and buffing. All major operations can be done without removal of the tire from the machine. The Ramsdell Mfg. Co., 6536 Carnegie Ave., Cleveland, O.

New Inner Tube Splicer

A NEW and noteworthy inner tube splicer acceptable as standard equipment to rubber engineers and tire manufacturers is here depicted. The apparatus is conveniently mounted on an upright support and operates without the use of an airbag surrounding the splice. An expansion core made of flexible sheet steel has been substituted for the airbag. This mandrel not only gives the necessary expansion under pressure but contains as well the steam for curing the tube internally. The expanding feature of the curing mandrel eliminates all wrinkling of the tube. The jaws retaining the tube splice externally are lined with soft rubber for cushioning their grip. These jaws are hollow for steam heating. The tube splice is thus cured from both sides and curing time is cut to five minutes.



OPEN CLOSED

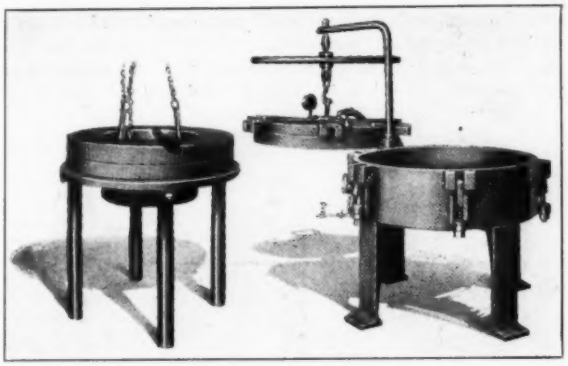
Huetter-Premier Tube Splicer

The device is made to handle all sizes of tubes and one experienced worker can operate a battery of 14 machines. Huetter-Premier Machine Co., 7215 Livernois Ave., Detroit, Mich.

Tire Remolding

TIRE repair vulcanizers and factory tire repair departments will be interested in the remolding equipment here referred to. This apparatus was designed to meet the demand for a method of curing a large range of tire sizes within a minimum floor space. With the remolding press pictured a different shell is used for each size tire to be remolded, and the same results are obtained as with the individual remolder.

A remolded, or rebuilt tire, must not be confused with the retreaded tire; this is simply a new tread design cured on a standard make carcass, which is not in line with the wishes of the original maker of the carcass, since a retreaded tire still bears his name, but not the original tread design. When a tire is remolded, the original maker's name is removed and the remolder's name is substituted. This is made possible by molding the tire from bead to bead. The carcass of the remolded tire can still be made to retain its original identity by the use of a colored medallion placed on the tire before curing, if desired. The Franz Foundry & Machine Co., Akron, O.



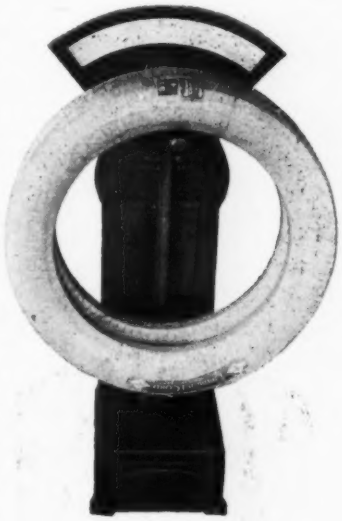
Franz Tire Remolding Equipment

Tire Weighing Scale

A CONVENIENT, accurate and automatic weighing scale, particularly suitable for use in a tire factory, is here pictured. The weight is automatically shown on a dial at the top of the apparatus. A substantially built tire hanger accommodates all sizes. The tires can be conveniently hung with minimum lifting for weighing, marking or tying. The scale platform is 12½ by 14 inches and will hold any package to be weighed besides tires.

The scale is full-automatic computing and weighing. There is nothing to press, hunt for or move to operate it.

The compound lever system supporting the platform of this scale is so designed as to render binding or friction impossible, permitting the weight on the platform to bear from any angle without faulty results. An added feature is the correctly designed and placed tire hanger which is a permanent part of the scale platform centering the load in a natural gravity position. Allsteel Scale Co., Inc., 25 West Broadway, New York, N. Y.



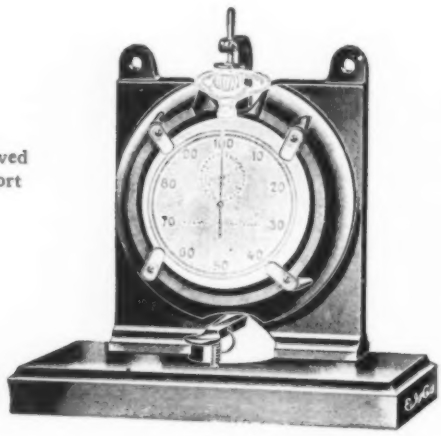
Triner Allsteel Scale

Stop Watch Holder

THE improved stop watch support here represented has met with much favor in the trade. In its improved form the stopping and starting lever is brought around at the back of the support with an adjustable head to take care of vibration in the height of stem of different makes of watches. This support has demonstrated its value by increasing the life of stop watches for the following reasons.

(1.) The watch always is held vertically which is the normal position for the bearings, and tends to prolong its accurate operation. (2.) The operator never handles the watch thereby saving the delicate mechanism from the jar of being laid down on a hard table, and the possibility of dropping or other mishandling the timer is also eliminated. (3.) No dirt or oil from the tester's fingers can get

into the stem or through the case into the works. (4.) The watch is held in position by spring clips, against a soft felt pad to further reduce any jar on the mechanism. (5.) The support may be permanently fastened to the table or wall, and the lever operated



Greiner Improved Watch Support

by a string or wire attached to the ring which fits through the lever. (6.) Watches lying around loose in the laboratory are likely to be lost, and are not missed until required for a test. When fastened in this support this factor is also eliminated. (7.) The economy affected by using this device will be demonstrated by the fact that one ruined stop watch of average quality represents the cost of more than three supports. The Emil Greiner Co., 55 Vandam St., New York, N. Y.

Electric Steam Vulcanizer

ALL repair men experience more or less difficulty in repairing balloon tires so that the tires retain their flexibility, proper shape and original appearance. A successful device for overcoming such difficulties is here depicted. This equipment comprises an inside curing arm automatically operated electrically to produce steam heat.

Miller Inside Curing Arm

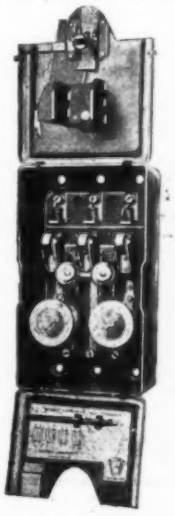
When a balloon tire is repaired on an inside curing arm the tread is not marred neither is it overcured or injured, therefore the tire retains its natural appearance and flexibility. Also by the inside curing method it does not matter whether the tread is crowned or flat for either form is immaterial to the operation of the inside cure since no tread matrices or other removable parts are required. Airbags are also eliminated. The pressure required is secured by wrapping the tire securely with wrapping tape and tightening down the pressure bar with the hand wheels shown in the illustration.

The curing arm is steam heated using electricity from a light socket to generate the steam. There are two flat type heating units bolted to a small boiler which is a permanent part of the arm. The boiler is completely encased in an asbestos packed metal jacket. Steam is generated in about 22 minutes after which the current need be on only 2 minutes and off 7 minutes. Charles E. Miller, Anderson, Ind.

New A. C. Manual Starter

THE new manual across the line A. C. motor starter depicted here is designed to meet the need for an inexpensive manual starter. It includes such outstanding advantages as overload cutouts, giving complete motor protection; cadmium plated, double break, roller type contracts; and small size. safety, dust-proof enclosing case.

The roller type contacts seem to be the forerunner of an unusual trend in motor control design. They are of the double break type, cadmium plated, and by breaking the arc in two places, give several times the life of ordinary contacts. In addition, the contact rollers turn after each operation to present a new contact surface for the next operation.



C.-H. Starter

The starter is quite small and compact; the enclosing case is dustproof and the cover is in two parts. This permits opening the lower section only, for replacing fusible links in the thermal overload cutouts. The cover can be opened only when the starter is in the "off" position and all current carrying parts are "dead." Installation can be made without removing the panel from case. All parts are easily accessible for quick inspection. This starter is finding wide application for use with fans, pumps, textile machinery, small machine tools, etc. The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

Water Level Gages for Boilers

FACTORY firemen will appreciate the advantages and importance of the instrument here pictured, for they appreciate that low water or high water levels in the boiler are equally undesirable. To avoid either condition it is necessary to provide some reliable means for informing the engineer of boiler water levels at all times, and before they reach dangerous proportions. From purely a safety standpoint such information should be readily accessible, as most firemen and engineers have many other duties to perform in addition to watching the water glass.

Bristol Water Level Gage

Easy accessibility for reading is one of the big advantages of the Bristol-Derr water level gage. It is not necessary to install the instrument directly on the boiler front, but may be located at a considerable distance: in the next room, next building, floor above, or floor below. This easy visibility promotes safety, especially in connection with the waste heat boiler which is most often neglected by the operator.

The Bristol-Derr instrument shown in the illustration is a modified thermo-electric pyrometer. It is furnished in both indicating and recording models, for use singly or in combination. The Bristol Co., Waterbury, Conn.

Editor's Book Table

Book Reviews

"The Colloidal Chemistry of the Rubber Industry." By E. A. Hauser, Oxford University Press, London, Humphrey Milford, 1928. Boards, 54 pp., 6 x 10 inches. Indexed, illustrated.

This volume contains six lectures, the first series of Gow lectures on the colloidal chemistry of rubber delivered at University College, London, between November 7 and 18, 1927. The author convincingly presents the actual and prospective value of the application of colloidal chemistry in the study of the problems of the rubber industry in the departments of planting, crude rubber production, and in the manufacture of rubber products. In these lectures are brought together a well-balanced survey of the rubber industry from which one can gain an adequate comprehensive outline of the chemical problems involved in the subject.

The topics treated are indicated in the following list of chapter headings: (1) Historical Introduction and the Colloidal Chemistry of Latex. (2) Tapping, Coagulation, Drying, Preservation, and Concentration of Latex. (3) The Structure of Rubber. (4) The Processes of Mastication, Calendering, Dissolution of Crude Rubber, and the Preparation of Rubber Mixes, with Special Reference to the Problem of Compounding Ingredients. (5) The Problem of Vulcanization. (6) Future Prospects, the Synthesis of Rubber.

"Modern Roadmaking." By Harold Bradley and C. C. Hancock. Published by Contractors' Record, Ltd., 329 High Holborn, W. C. 1, London, England.

This is a treatise on the various methods of road construction, with a separate chapter devoted to rubber roadways and the progress made in their improvement during the past fifteen years. The authors give credit to Rubber Roadways, Ltd., for giving to the leading inventors ample opportunity to test their respective types of blocks, and give much informative data on the special features of each experiment and the results of tests under modern traffic conditions. The conclusion reached from this resumé is that the best system of laying rubber road covering has not yet been tried and that when this proper process has been invented it will place rubber in the front rank of paving materials.

Bibliography on Rubber Technology, June, 1926-December, 1927. New York, 1928. 81 pp. 6 by 9 inches. Special Libraries Association Information Bulletin No. 7. General office, 11 Nisbet St., Providence, R. I.

This is the second bibliography of the Rubber Committee of the Special Libraries Association listing the principal articles on the source, composition, testing, manufacturing of rubber products, and the sources of information on synthetic rubber and reclaim. With this bibliography and the previous one, issued in 1928, the trend of scientific and technical progress in the rubber industry may be followed from 1924 to 1927.

The contents embraces the following topics segregated by sections as follows: 1, Latex and Raw Rubber; 2, Compounding Ingredients, including Organic Accelerators; 3, Physics of Rubber, including Physical and Mechanical Testing; 4, Chemistry of Rubber, including Chemical Analysis; 5, Manufacturing Methods and Devices Applicable to Rubber Goods in General; 6, Synthetic Rubber and Rubber Substitutes; and 7, Reclaiming Rubber.

GROSS RUBBER IMPORTS INTO CZECHOSLOVAKIA DURING 1926 amounted to 1,899,700 kilos, exports 118,800 kilos and net imports 1,749 long tons.

New Publications

"Gastex Carbon Black." A 15-page booklet issued by The Grasselli Chemical Co., Rubber Service Dept., Cleveland, O., contains full descriptive details concerning the characteristics, properties and uses of this new carbon black. Also sample formulas, tables, graphs and test data indicating the behavior of Gastex black with various softeners and anti-oxidants.

"Report of Committee D-11 on Rubber Products." This is a 36-page preprint of the work and recommendations of Committee D-11 presented at the Ninety-first annual meeting of the American Society for Testing Materials, held at Atlantic City, June 25-29, 1928. Beside the general report it comprises an appendix of two tentative proposals: 1. "Specifications for Hevea Rubber Insulation on Insulated Wire and Cable"; 2. "Methods of Chemical Analysis of Rubber Products."

"Standard Methods of Testing Rubber Products." This 4 leaf folder, issued by The Roessler & Hasslacher Chemical Co., 709 Sixth Ave., New York, N. Y., is reprinted from A. S. T. M. Standards, 1927, Part II, Non-Metallic Materials. It is perforated for insertion in the ordinary loose leaf pocket notebook, thus facilitating its convenient assembly with the same company's pocket notebook of data on the characteristics of its well known list of popular accelerators.

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DEVELOPMENT OF THE RUBBER INDUSTRY IN THE LAST FIFTY YEARS, WITH SPECIAL REFERENCE TO THE GERMAN INDUSTRY. F. Diestelmeier, *Kaut.*, 1928, pp. 68-73.

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New Improvements in the Manufacture of American Carbon Black. Dr. Werner Esch, *Kaut.*, 1928, Vol. 4, No. 6, pp. 127-128.

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The Behavior of Rubber-Lined Apparatus Toward Organic Solvents. A. Bresser, *Kunststoffe*, 1928, Vol. 18, No. 6, pp. 125-127.

Rubber Fountain Toothbrush

The self-filling pen seems to have suggested the self-filling toothbrush. A western inventor has devised such a dental implement with a hollow hard rubber handle inclosing a long soft rubber sac. By pressing a small lever on one side of the handle a special tooth-cleaning solution can be expressed from the sac to moisten the bristles, and when empty the sac can be refilled through suction by pressing a lever on the opposite side of the handle.

Letters from Our Readers

Question of Latex Penetration

57 Chancery Lane,
London, W. C., 2, June 19, 1928.

To the Editor,

Dear Sir: In the India Rubber World, June 1, 1928, p. 56, under "Cord Impregnating Limits" you refer to my saying that I am still unconvinced of the superiority of latex impregnation or that latex can be made to penetrate a cord or a thread any more than can a rubber solution. In order to avoid misapprehension as to my views, may I say that I was not expressing an opinion as to the value of latex treatment of tire cords or fabrics, but merely as to the question of penetration as such (cf. *Institute of Rubber Industry Transactions*, February, 1928, p. 364). My view, indeed, is, broadly, that the use of latex does offer certain distinct advantages in the proofing or treatment of such materials.

P. Schidrowitz.

Industrial Illness

10 State St., Boston, Mass., July, 17, 1928

To the Editor:

Dear Sir: I am much interested in the article on industrial illness and its needs that appeared in your July number, as this touches on the outstanding difficulty in the rubber business—lack of profits.

With the exception of a few outstanding companies net profits averaged nearer five than ten per cent in the net sales, and too many show red figures.

For this reason conservative bankers are slow to market rubber securities. The only remedy is to apply the principles of sound business and put rubber companies on a par with other industries.

A. T. Hopkins,
Management Engineer.

Rubber Wads for Whale Guns

Tow, hemp, and felt are rapidly being replaced with rubber for holding charges of powder in whaling guns. Nearly every ship in the North Pacific whaling industry now uses rubber wads. It is claimed that they can be rammed tighter and through such compression yield a better explosion, they can be applied quickly, and they keep the powder dry. Although very snug-fitting, they release the charge projecting the harpoon with its rope line to the giant fish as readily as the old style wadding.

Rubber Goods Exports Holding Up

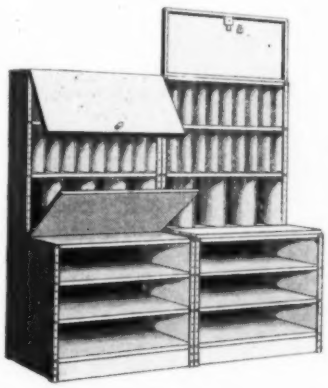
Despite the fact that unit values had declined considerably, American exports of rubber products for the first four months of 1928 were valued at $23,811,700, or $71,000 more than for the first third of 1927. Exports of scrap rubber, however, eased off from 4,466,437 pounds in March valued at $265,029 to 3,155,943 pounds in April worth $149,822, the average export price at the same time falling from 6 to 5 cents per pound. Exports of reclaimed rubber declined but 8 per cent in volume and value, the shipping price remaining quite constant at 7 cents per pound.

A Correction

We are pleased to make the following correction in the list of persons elected to membership in the Institution of the Rubber Industry published in India Rubber World, July 1, 1928. F. S. Malm of the manufacturing department, Western Electric Co. Hawthorn Station, Chicago, Ill., was among those elected.

Interlock Steel Shelving

THERE are numerous storage problems in every rubber factory and laboratory where uncured stocks of rubber mixings, laboratory test batches, cured samples, etc., are handled, not to mention the equally important demands for clean, safe storage of goods, and small supplies in stock and other departments. These problems can be readily solved by resorting to metal shelving units which are easily adaptable to every condition. The pair of units here pictured serves as a combination cabinet and counter, well suited as a compounding table for the laboratory.



Laboratory Metal Cabinet Units

The upper compartments are suitable to hold small containers of many compounding ingredients. The somewhat lower compartments under these will hold jars of softeners, small test batches for curing, while the broad shelving in the deeper base sections is well adapted to contain crude rubbers and reclaims. It will be noted that locked doors are provided for closing the upper sections. While in use, the lower doors act as counters and are linoleum covered. The cabinet is of steel, with adjustable shelving and finished in battleship gray or olive green in baked enamel.

The interlocking type of construction employed in this cabinet is also embodied in shelving of every description and in special cabinets for every need of laboratories and stock rooms. Interlock Metal Units, Inc., 31 East 27th St., New York, N. Y.

Ford Company Finds Many Uses for Rubber

The Ford Motor Co. is doing considerable experimenting in rubber manufacture, as well as making many rubber articles now used in Ford and Lincoln cars and Ford trucks. Its plant at Detroit is completely equipped for converting raw rubber into the many parts used in modern automobile construction.

There are a hundred and ten rubber parts in the Model "A" Ford and a great many of these function solely to protect the car and its occupants against the action and noise of road shocks and power vibration.

Wherever there is a possibility of a squeak developing where frame members are joined, or where the body is attached to the frame, rubber anti-squeak parts have been designed and installed. Engine mountings of the car are cushioned in rubber and the following parts each have an anti-rattler device of rubber: spare wheel carrier support; steering column support; steering gear control rod; gas tank cable support; carburetor adjusting rod on the dash board and the front belt rail.

The windshield, windows and doors are fitted with rubber weatherstrips to keep out driving rain and wind and the entire ignition system is insulated with rubber. The steering wheel is finished in hard rubber, which is also utilized in the manufacture of a number of the parts. Fordite, used in the door bumpers and other parts, is a high grade rubber composition material.

Russian Rubber Absorption[1]

In the absence of official Russian import statistics for crude rubber, an attempt has been made to arrive at an approximate figure of Russian rubber absorption by studying the export statistics of Germany, United Kingdom, and United States, the three principal sources of the Russian supply of crude rubber. Such figures indicate that in the first four months of 1928, Russia absorbed 3,548 long tons of crude rubber, compared with 4,473 long tons in the first four months of 1927.

The following statistical table is very instructive as to the changing sources of the Russian rubber supply; the United Kingdom furnished practically 100 per cent of the total supply in the 1927 period of four months; whereas, in the 1928 period, 40 per cent came from the United States; 19 per cent from Germany, and 41 per cent from the United Kingdom.

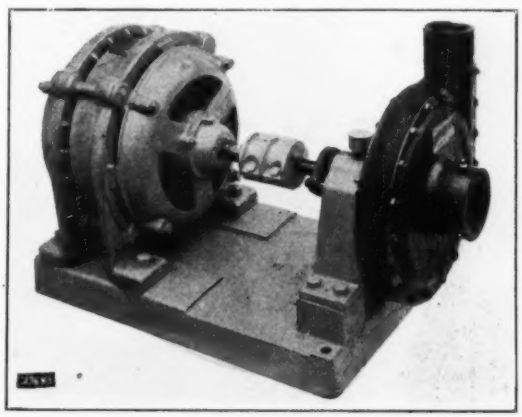
EXPORTS OF CRUDE RUBBER TO RUSSIA

	United States	Germany	United Kingdom	Total	
1927	Pounds	Pounds	Pounds	Pounds	Long Tons
January	.....	.....	1,799,400	1,799,400	803
February	.....	.....	2,032,400	2,032,400	907
March	.....	.....	1,756,300	1,756,300	784
April	.....	15,432	4,417,300	4,432,732	1,979
Total	.....	15,432	10,005,400	10,020,832	4,473
1928					
January	.....	947,758	1,281,400	2,229,158	995
February	4,600	43,210	307,400	355,210	159
March	2,836,089	130,512	321,100	3,287,701	1,468
April	338,299	402,340	1,333,800	2,074,439	926
Total	3,178,988	1,523,820	3,243,700	7,946,508	3,548

[1] Rubber Division, Department of Commerce, Washington, D. C.

Hard Rubber Acid Pump

THE machine here pictured is a hard rubber, acid resisting pump, manufactured in five sizes, capable of delivering 50 to 300 gallons per minute. These pumps are of the side suction, enclosed impeller type, performing with a high degree of efficiency, when operating under the conditions for which they are designed. The entire pump body and impeller are made in highly polished steel dies, and wherever machined, are hand finished, enabling the pump to operate at a relatively high percentage of efficiency. This pump differs from



Bingham Acid Pump

the other rubber pumps, in that its entire casing is made of rubber, rather than of rubber lined metal casings. Monel metal is used for shafting, which, with the rubber, makes these pumps capable of handling all acids except concentrated sulphuric acid. This equipment can, however, handle mild solutions of sulphuric acid without causing any deterioration in the pump. Bingham Pump Co., E. Seventh at Madison, Portland, Ore.

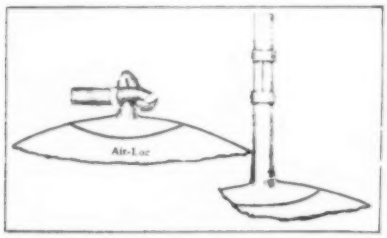
New Goods and Specialties

Fiz-Ette

Fiz-ette can be used on all carbonated or charged drink bottles, and will prevent contents of partly used bottle from going flat. It fits any standard size bottle. Small, compact and designed with no sharp points, Fiz-ette may be carried in the pocket for club or party use. In addition to being a handy drink mixer, it serves as a stopper and keeps ginger ale, and such carbonated beverages, which may be left in the bottle fresh and drinkable for future occasions. The Anderson-Pitt Corp., Kansas City, Mo., is the manufacturer.

New Bladder for Balls

A valveless bladder, upon which a patent is pending, has recently been perfected by Lady Edison. After the bladder has been inflated, the tube is bent and inserted through the slot, as shown in the illustration, retaining the air in the ball. This bladder is used in all of the many new balls which have been designed by Lady Edison.



Valveless Bladder

Plate Scraper

Daisy Scraper

A convenient device designed to lighten the work of dish washing is the Daisy plate scraper which is made with a red or black rubber handle and white scraping blade or, if preferred, an all white scraper. As the handle and blade are made in one piece, there are no joints or connections in which dirt, grease, food, etc., might lodge. It is easily cleaned. Schacht Rubber Mfg. Co., Huntington, Ind.

Jar Covers

The Reliance Rubberware, Ltd., Formosa St. and Amberley Rd., Paddington, London W. 9, England, is manufacturing a line of rubber jar covers which, it is said, are odorless, tasteless and hygienic.

Rubber Doll

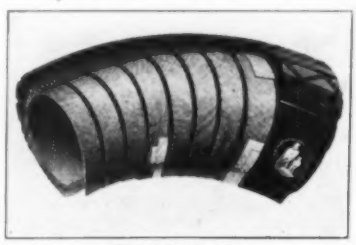
To supplement its line of rubber dolls, the Hanover Rubber Co., Hanover, Germany, has added a baby doll with movable hands and legs. Lifelike features and coloring combine to create a realistic and appealing little infant sure to find favor in the hearts of the tiny

Excelsior Doll

"mothers" for whom they are designed. The distributer for these Excelsior toys in the United States and Canada is George Borgfeldt & Co., 111-119 E. 16 St., New York, N. Y.

Goodyear's New Tire

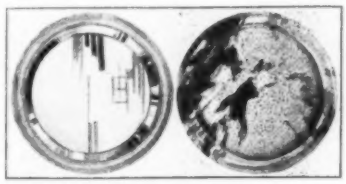
Step-down section of the new double eagle tire illustrated, just introduced by the Goodyear Tire & Rubber Co., Akron, O., shows construction and design which is stamped on every casing. Company officials claim that it is built stronger, with higher profile, and double thick tread containing the toughest compound Goodyear has ever developed.. Every means have been employed to provide for longer wear, with extra layers of rubber lining the carcass and between the plies. The tires are cured by a special low temperature process, also insuring longer wear.



Double Eagle

Unbreakable Mirror

The old superstition of seven years' bad luck from a broken mirror need cause



Lucky Vanity Mirror

no further heartache to the young flapper carrying her vanity mirror to help repair the ravages caused by wind, dust and dirt. The Lucky Vanity Mirror is a dainty molded rubber container encasing a high quality bevelled mirror and can be dropped on a hard floor and will not even crack. A substantial rubber rounded edge equally protects the back and front of the glass. Manufactured by the Reliance Rubberware, Ltd., Formosa St., and Amberley Rd., Paddington, London W. 9, England.

Perfo-Siphon

Claims that Perfo-Siphon is the only siphon on the market which does not require the removal of the crown cap is made by the manufacturer, Vaughan Novelty Mfg. Co., 3211-25 Carroll Ave., Chicago, Ill. No opener is required and it may be put on or taken off in a second. The siphon can be used over and over again. A rubber ring in the neck of the siphon makes it air tight. The crown capped bottle contains no gas reservoir like the regular seltzer siphon bottle, consequently the flow may stop after a small quantity has been used; if this happens let the valve close, give the bottle a slight shake and the balance will discharge easily.

For additional information regarding these articles write New Goods Dept., INDIA RUBBER WORLD, *420 Lexington Ave., New York, N. Y.*

Teething Pad

The Dennis teething pad has been recommended by physicians and dentists as an aid to teething and a preventative

Dennis Pad

of adenoids. It is made on simple but scientific lines, the pure latex rubber containing no poisonous dyes or metal to harm the infant. The pad acts as a massage to the gums when the child bites into the trench. It is easily sterilized by dropping into boiling water, and can be hung around the neck by a cord passed through the hole in the center. Davol Rubber Co., Providence, R. I.

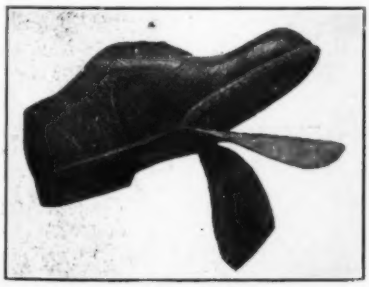
Cover for Water Bottle

Charlotte

Uncovered hot water bottles frequently cause painful accidents, especially among young children. To prevent such accidents a cover, the Charlotte, has been designed by C. J. Hewlett & Son, Ltd., 35-42 Charlotte St., London, E. C. 2, England, which closely fits the bottle, while a cap, adjusted by studs, protects the stopper. The cover is supplied in either pink or gray.

Boy's Tan Sole

The bottom of the boy's tan oxford is built up by a method that insures extra wearing qualities and keeps the shoe in shape. The illustration shows the bottom



Ustan Soles

construction with a Laflex doubler combined with the Ustan outer sole. The doubler is buffed on both sides and cemented both to the cork filler and the outer sole. The sole is buffed on the attaching side and thoroughly cemented to the doubler. The United States Rubber Co., 1790 Broadway, New York, N. Y., is the manufacturer.

Garden Hose

The molded garden hose manufactured by the Murray Rubber Co., Trenton, N. J., differs radically from the ordinary products in that it is vulcanized in steel molds under a pressure several times greater than is possible with ordinary lead molds. The strength and life of the hose is therefore increased because of the strong hard laid cord construction and perfect bond between rubber and fabric. The inner tubes are smooth and flexible while the outer cover is a tough non-blooming rubber.

Device for Golf

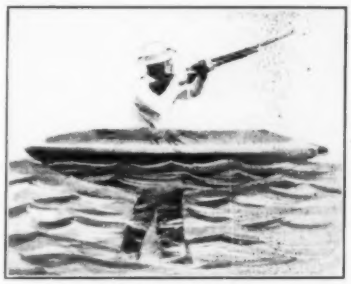
The Masterpiece, it is claimed by the manufacturer, Golf Masterpieces, Inc., 860

Masterpiece

Hanna Bldg., Cleveland, O., will improve stance, swing, follow through and timing, and add yards to drives. It is a practical device for perfecting one's game, and is widely used by experienced golfers as well as beginners. The ball is built to offer air resistance within itself upon the impact of the club and is anchored to the heavy rubber mat by a tough, durable rubber cord. Of simple construction, it is built to stand the roughest use and requires no nets, cages or backstops.

Hunter's Rubber Boat

A duck hunter may be as amphibious as the fowl he seeks with a new rubberized fabric contrivance designed as a boat. Instead of being limited to shallow water, as with wading trousers, he may with this buoyant device propel himself about as though in a canoe. It is an inflatable, cigar-shaped affair having a cavity in the middle for the hunter. Depending from it are a pair of light rubber boots with flat rubber plates serving as soles and for treading water or walking on marshy ground. The wearer dons the craft by stepping into the "manhole," thrusting



Treading Water

his legs into the boots, tying a circular piece of rubberized fabric about his waist, and fastening suspenders to his shoulders. The boat, which is light and portable, has a compartment 'fore for a gun, paddle, and ammunition, and miscellaneous supplies may be carried aft. Cecil C. Carmichael, 4614 Felton St., San Diego, Calif., is the inventor.

Rubber Massage and Shaving Brush

The massaging effect of rubber is used advantageously in the manufacture of the Contidax massage and shaving brush which the manufacturer, "Contidax" General-Vertrieb, Otto Sternau, Ferdinandstrasse 29, Hamburg 1, Germany, claims will also overcome all danger of infection from anthrax and other skin impurities. The troublesome falling out of hairs is impossible with Contidax as the rubber bristles are made in one piece with the handle. From a hygienic standpoint the brush offers special advantages as it will not retain any of the soap and may be cleaned by simply rinsing and drying, a quick operation.

Contidax

Sport Bag

Golfers, swimmers and tennis players will favor the Slide-Eez bag which is guaranteed waterproof and may be obtained in a variety of colors. Triple-texture rubberized fabric is used making a light and durable container. The fastener

Slide-Eez

works easily and simply. William W. Stanley Co., Inc., 359 Broadway, New York, N. Y.

Financial and Corporate News

New Incorporations

BURBROOKE RAINWEAR, LTD., July 6 (New York), $10,000. S. S. Goldberg, 110 West 84th St., M. L. Wiesenthal, 45 E. Mosholu Parkway North, both of New York, N. Y., and A. M. Tendler, 438 Pulaski St., Brooklyn, N. Y. Principal office, Manhattan. To manufacture rubber clothing and rubber specialties.

GOODRICH RUBBER CO. OF BRAZIL, INC., July 19 (New York), $10,000. J. D. Tew, 500 S. Main St., Akron, Ohio, F. H. Butehorn and J. R. Turner, both of 120 Broadway, New York, N. Y. Principal office, New York, N. Y. To manufacture rubber and rubber goods.

MEIXSELL MFG. CO., July 3 (New Jersey), capital stock 1,000 shares preferred and 12,500 shares common. C. W. Symanski, 28 Warren Ave., F. I. Frank, 268 Montgomery St., and R. Impal, 345 5th St., all of Jersey City, N. J. Principal office, 480 Hudson St., Jersey City, N. J. To manufacture rubber goods and fabrics.

MEYER'S TIRE SERVICE, INC., July 12 (New York), $10,000. F. L. Meyer, 207 Holland St., E. Madden, 316 E. Castle St., both of Syracuse, N. Y. and E. Nixon, 118 Franklin Ave., Solvay, N. Y. Principal office, Syracuse, N. Y. To manufacture tires, rubber goods, etc.

NORTH AMERICAN RUBBER CO., INC., July 12 (New York), $40,000. P. A. Gatti, 428 Fenimore St., L. Gatti, 509 Dean St., and M. Gatti, 220 Hawthorne St., all of Brooklyn, N. Y. Principal office, Brooklyn, N. Y. To manufacture rubber boots, shoes, etc.

THE RICH CAOUTCHOUC CO., INC., June 20 (New York), $25,000. T. Rich, Prospect Park, White Plains, N. Y., E. Rich, 15 William St., and P. Grailard, 237 West 105th St., both of New York, N. Y. Principal office, Manhattan. To deal in rubber, etc.

SERVICE SPOT, INC., July 18 (New York), capital stock 200 shares no par value. E. T. Kelley, H. C. Quigley and T. McErlean, all of 50 Church St., New York, N. Y. Principal office, Rockville Center, N. Y. To manufacture automobile truck tires.

WALTER F. WHEELER, INC., July 10 (New York), $30,000. W. F. Wheeler, 724 Main St., Poughkeepsie, M. J. Wheeler, Rhinebeck, and W. B. Wheeler, 3rd Ave. and 129th St., New York, all of New York. Principal office, Poughkeepsie, N. Y. To manufacture auto accessories, tires, etc.

Akron Rubber Stock Quotations

July 21, 1928

COMPANY	Bid	Asked
Akron Rubber Reclaim	17	21½
Akron Rubber Reclaim, pfd.	..	97
Falls	5	10
Faultless	30½	33
Firestone	175	179
Firestone, 6% pfd.	108½	110
Firestone, 7% pfd.	109¼	..
General	166¼	175
General, 6% pfd.	95	96½
Goodrich	74½	76
Goodrich, pfd.	111	113
Goodrich, 6½s	106½	107
Goodyear	47	48¼
Goodyear, 1st pfd.	92¾	94
Goodyear, 5s '28	99½	100
Goodyear, 5s '57	90¾	91¼
Goodyear, 5½s '31	100½	102
India, com.	36½	36¾
India, 7% pfd.	..	97
Mason	..	½
Mason, pfd.	..	5
Miller	19	20
Miller, 8% pfd.	80	85
Mohawk	135	145
Mohawk, 7% pfd.	87	90
Rubber Service	..	37
Seiberling	41	42
Seiberling, 8% pfd.	..	105
Star	..	1
Star, 8% pfd.	..	8

CRUDE RUBBER IMPORTS INTO KOBE AND OSAKA IN THE FIRST quarter of 1928 were only 6,652,000 pounds as compared to 8,497,000 pounds in the first quarter of 1927.

New York Stock Exchange Quotations

July 23, 1928

Company	High	Low	Last
Ajax Rubber	8⅞	8½	8⅞
Fisk Rubber	11½	11⅜	11½
Fisk Rubber, 1st pfd. (7)	68¼	68¼	68¼
Fisk Rubber, 1st pfd. cv. (7)	68	68	68
Goodrich, B. F. (4)	76¼	75⅞	75¼
Goodyear Tire & Rubber, com.	47⅞	47	47½
Goodyear Tire & Rubber, 1st pfd. (7)	93½	93½	93½
Intercontinental Rubber, com.	10¾	10	10½
Kelly-Springfield Tire, com.	19⅝	19¼	19½
Kelly-Springfield Tire, 8% pfd.	65¾	65¼	65¾
Lee Rubber & Tire	19¼	19¼	19¼
Miller Rubber	19⅜	19⅜	19⅜
Norwalk Tire & Rubber	3¼	3¼	3¼
U. S. Rubber, com.	31¾	30⅞	31
U. S. Rubber, 1st pfd.	63¾	61⅞	61⅝

Dividends Declared

COMPANY	Stock	Rate	Payable	Stock of Record
Cambridge Rubber Co.	Pfd.	1¾% q.	July 2	June 25
Dominion Rubber Co.	Pfd.	1¾% q.	June 30	June 21
Dunlop Tire & Rubber Goods Co., Ltd.	7% Pfd.	1¾% q.	July 1	June 30
Firestone Tire & Rubber Co.	6% Pfd.	1½% q.	July 16	July 1
Firestone Tire & Rubber Co.	Com.	$2.00 q.	July 20	July 10
Firestone Tire & Rubber Co.	Pfd.	$2.00 q.	July 20	July 10
Fisk Rubber Co.	1st Pfd.	$1.75 q.	Aug. 1	July 16
Fisk Rubber Co.	1st Conv. Pfd.	$1.75 q.	Aug. 1	July 16
Fisk Rubber Co.	2d Conv. Pfd.	$1.75 q.	Sept. 1	Aug. 15
General Tire & Rubber Co.	6% Pfd.	1½% q.	June 30	June 20
General Tire & Rubber Co.	Pfd.	$0.75 q.	Aug. 1	July 20
B. F. Goodrich Co.	Com.	$1.00 q.	Sept. 1	Aug. 10
B. F. Goodrich Co.	Pfd.	$1.75 q.	Oct. 1	Sept. 10
Hood Rubber Co.	7½% Pfd.	$1.87 q.	Aug. 2	July 20
Hood Rubber Co.	7% Pfd.	$1.75 q.	Aug. 2	July 20
Manufactured Rubber Co.	Pfd.	$0.15 q.	July 2	June 20
Mohawk Rubber Co.	Pfd.	1¾% q.	July 2	July 1
Seiberling Rubber Co.	Pfd.	$2.00 q.	July 2	June 20
Stedman Products Co.	Pfd.	$1.75 q.	July 2	June 23

Legal

Adjudicated Patents

PATCHES. (C. C. A. Mo.) The Bowes & Bowes patent, No. 1,489,477, for process for rubber patches. Held not infringed. Knick v. Bowes "Seal Fast" Corp., 25 F. (2d) 442. *Official Gazette*, Vol. 371, p. 529

Custom Appraisers Decisions

GARTERS. No. 6158. Protest 182,883-G of Jay Thorpe, Inc. (New York). Garters in chief value of silk classified as wearing apparel at 60 per cent. ad valorem under paragraph 1210, tariff act of 1922, are claimed dutiable at 55 per cent under paragraph 1207, or at 25 per cent. under paragraph 1439. Opinion by Justice Tilson. Garters composed wholly or in chief value of silk were held dutiable at 55 per cent. under paragraph 1207 in accordance with the amended report of the appraiser. *Treasury Decisions*, Vol. 53, No. 24, p. 27.

EBONITE RINGS. No. 6222. Protest 150,208-G of United Fruit Co. (New York). Ebonite rings classified as manufactures of hard rubber at 35 per cent. ad valorem under paragraph 1440, tariff act of 1922, are claimed dutiable as machine parts at 30 per cent. under paragraph 372. Opinion by Justice McClelland. It appeared that the merchandise is hard rubber rings which the appraiser says "may be used as packing or washers for marine pumps or on any other apparatus requiring rings of such dimensions, not parts of machines." In the absence of evidence bearing upon the issue involved the protest was overruled. *Treasury Decisions*, Vol. 53, No. 25, p. 21.

Patent Suits

VULCANIZATION. Re. 16,682, R. M. Warner, method of vulcanizing rubber, filed April 23, 1928, D. C., N. D., Ohio, E. Div., Doc. 2551. The Miller Rubber Co. v. The India Tire & Rubber Co. *Official Gazette* No. 371, p. 534.

FREE DUTY INTO NEW ZEALAND ON ALL HOT WATER BOTTLES of British make, give these manufacturers an edge on their foreign competitors who must pay a duty of 20 per cent ad valorem.

The Rubber Industry in America

Ohio

The B. F. Goodrich Co. has recently purchased a monoplane which will accommodate four passengers and be used for transporting the company's officials between the various plants and offices. Cy Caldwell, of Nungesser and Coli fame, has been retained as pilot.

The Textile Rubber Co., 765 Miami St., Akron, O., has appointed C. H. Kellow, former sales manager, vice president and general manager. The company manufactures a complete line of handle bar grips for the bicycle and juvenile toy trade and specializes on molded rubber articles for toy manufacturers, such as small molded tires, hard rubber wheels, hard rubber wheels with soft treads, etc. E. S. Teed, former president of the Textile company, recently resigned to accept a position with the Firestone Tire & Rubber Co.

The Polson Rubber Co., Garrettsville, O., at the regular directors' meeting, made R. D. Woolery secretary and treasurer of the company. Mr. Woolery, who has been identified with the company for the past thirteen years, and was largely instrumental in developing and perfecting its principal product, the Polson Super tube, will retain the factory management in addition to his new responsibilities.

The Tuscan Rubber Co., Carrollton, O., manufacturer of a rubber cork, is meeting with a ready response for its product and reports business as very good.

The Mason Tire & Rubber Co., Kent, O., plans an extensive advertising campaign which will tend to materially expand its sales activities and increase the number of its dealers.

The Goodyear Tire & Rubber Co., Akron, O., reports that Albert L. Bowman has resigned to take charge of the commercial tire sales department of the Miller Rubber Co.

William O'Neil, president of the General Tire & Rubber Co., addressed the July meeting of the newspaper section of the International Advertising Association at Detroit. He discussed "News Value in Advertising" and stated that the advertising of tires with their various changes, developments, styles and service was real live news.

R. M. Pierson, Goodrich legal counsel, has resigned to enter the private practice of law, specializing in patent and trade mark business. W. D. Eakin has been appointed his successor.

The H. & G. Rubber Co., Cleveland, O., is occupying part of the plant of the Tuscan Tire & Rubber Co., Carrollton, O., for the manufacture of automobile tires.

The Pugh Tire Co., Youngstown, O., plans to extend its line of retail stores to include other states. The company has built up a large business principally through the time payment plan.

The Monarch Tire & Rubber Co., Hartville, O., has enjoyed a banner year, with prospects promising for an increase in production during the coming months.

The Trump Rubber Co., Kent, O., has taken over the factory formerly occupied by the Eclat Tire Co. and will start work shortly on the production of rubber gloves.

The Swinehart Tire & Rubber Co., Akron, O., will hold its annual picnic August 16 at Chippewa Lake. A general holiday has been declared and a program laid out that promises to eclipse all previous ones. Buses will be provided for employes and their friends.

Courtesy Firestone Tire & Rubber Co.

A battery of machines used in building Firestone tires. Here the tires are built up ply by ply ready for the final operations of applying the tread and curing.

Leading Manufacturers Form National Rubber Machinery Co.

The National Rubber Machinery Co. has been incorporated in Ohio and will take over the business of five leading machinery companies: The Banner Machine Co., Columbiana, Ohio; The Akron Rubber Mold & Machine Co. and The Kuhlke Machine Co., Akron, Ohio; De Mattia Bros., Inc., and the De Mattia Foundry & Machine Co., Clifton, N. J. These companies have been successfully engaged in the manufacture of rubber machinery for from twelve to thirty years and furnish equipment to approximately 80 per cent of the trade, and the consolidated company, it is said, will be the largest of its kind in the world. The organization's central office will be located in Akron.

The following officers were elected at a meeting held in New York, July 12: Stanley W. Harris, president, formerly president of Akron Rubber Mold & Machine Co.; Peter De Mattia, vice president and manager of De Mattia plant and formerly president of De Mattia Brothers, Inc.; Otto J. Kuhlke, vice president and manager of Kuhlke plant; Barthold De Mattia, vice president, formerly president of De Mattia Foundry & Machine Co.; Frank H. Grove, vice president and manager of Banner plant, formerly president of Banner Machine Co.; Elmer T. Coyle, vice president, formerly secretary of Banner Machine Co.; M. D. Kuhlke, treasurer; G. F. Hobach, secretary; Frank Haveron, assistant secretary and treasurer; M. A. Pearson, assistant treasurer.

All the above are also directors with the exception of M. A. Pearson. S. Stanwood Menken, attorney, New York; Dudley Maxon, Akron attorney and Graham Adams, New York banker, are the three remaining directors to make up the board of twelve.

The total assets of the consolidated companies, according to the balance sheet as of March 31, 1928, were $3,223,954 of which $2,310,488 were for land, building, machinery, equipment, furniture and fixtures. The combined earnings of the five companies for the past four years averaged $356,454.34 per year.

Akron University Research Library

The new Akron University will have one of the most complete research laboratories in the world, according to Professor H. E. Simmons, head of the department of chemistry. It will be designed to be of particular service to the rubber industry of Akron, but should grow to be the mecca for all students interested in the science of rubber. Firestone and Goodyear each have fellowships established at the University and it is hoped to obtain three more, making five in all.

Goodyear's Advertising Manager

Always keenly interested in dealer advertising, C. T. Hutchins in the years of his apprenticeship found time to apply himself to a study of his favorite subject and familiarize himself in the newest methods and means employed. As a result of this application, and his success in the various departments dealing with

C. T. Hutchins

advertising, when the position of advertising manager for the Goodyear Tire & Rubber Co. of Akron, O., became vacant early in 1928, he was recognized as the logical choice to fill the vacancy.

Mr. Hutchins was born in Auburn, N. Y., and his first entry into the business world was as a member of the Pullman Sleeping Car Co. in 1909. During the following five years, he was a salesman for the Studebaker Corp., Stearns Auto Co. and the Locomobile Co.

It was in July, 1914, that he joined the Goodyear company and was sent to the Los Angeles branch office for several weeks. He then represented the company as a salesman for about five years, until his appointment as a branch manager, but in 1919 he was called to the Akron office to head up the dealer advertising department. His success in this work was so marked that he was appointed assistant manager of the sales promotion department, to be followed by a later promotion as assistant manager of the advertising department, which includes the sales promotion activities and dealer advertising. When R. S. Wilson was made vice president and general sales manager, Mr. Hutchins succeeded him as advertising manager.

His work was interrupted for eight months during the World War, during which time Mr. Hutchins served with the French Army.

Hook-Up Wire

The Flex-O-Color rubber hook-up wire is manufactured by The Wheeler Insulated Wire Co., Bridgeport, Conn. It is designed for hooking up batteries, wiring sets, and may also be used as a ground wire. Flex-O-Color is insulated with a colored rubber, with a frayless insulation.

Goodrich Quarterly Meeting

The regular quarterly meeting of The B. F. Goodrich Co. was held July 25. After the meeting the directors issued the following statement:

The operations of the company during the first six months of 1928 resulted in a loss of $1,574,889. This was caused by the drastic decline in the price of crude rubber brought about mainly through the decision to remove the British rubber export restrictions. All raw materials including crude rubber on hand and under commitment has been taken into the accounts at the lower of cost or market.

Net sales for the first six months of 1928 amounted to $70,624,878. Net sales for the same period in 1927 amounted to $69,274,347. The increase in volume of sales was relatively greater than the dollar sales would indicate as prices were substantially lower during the first six months of 1928 than during the corresponding period of 1927. The reserve of $1,000,000 for contingencies set aside December 31, 1927, remains intact. Vacancies in the executive committee were filled by the appointment of V. I. Montenyohl, treasurer, and T. B. Tomkinson, comptroller.

The regular dividend of $1.75 per share was declared on the preferred stock payable Oct. 1, 1928, to stockholders of record Sept. 10, 1928. A dividend of $1.00 per share was declared on the common stock without par value payable on Sept. 1, 1928, to stockholders of record Aug. 10, 1928.

Mason Tire & Rubber Co. in Hands of Receiver

According to reports the Mason Tire & Rubber Co., Kent, O., has been placed in the hands of a receiver, as the result of the filing of an action by J. B. Ricker, a stockholder, alleging that the concern has no tangible operating capital. Liabilities were listed at $600,000 and current assets at $1,500,000. The annual report for the past year showed a deficit of $472,897.

The greater percentage of the company's business was furnished by the Ford Motor Co. and this business, since the introduction of the new Ford model, has fallen off considerably, according to Mr. Ricker's complaint.

P. W. Eigner, president of the Kent National Bank, has been named receiver and he will continue the operations of the plant but on a more conservative scale.

Akron to Honor Memory of Henry Corson

A movement has been started in Akron to perpetuate the memory of Henry Corson through a memorial association. One of Akron's leading business men, Mr. Corson was also a great philanthropist and gave a fortune to the building of churches and Sunday schools. The plan has not been completely formulated as yet, but friends and associates of Mr. Corson have been called to discuss ways and means.

Midwest

The Reliable Airless Tire Corp., Minneapolis, Minn., has begun operations in its plant for the manufacture of steel inner tubes for tire casings. The tube is made from a special type of steel, is hollow, and cost no more than the rubber tubes. J. C. Nyborg, the inventor, is president of the company.

Keystone Rubber Co., Inc., 176 N. Wacker Drive, Chicago, Ill., carries a line of special molded goods which includes belting, packing, mattings, bands, hose, boots, valves, etc. The Keystone company has had forty years' experience in the manufacture of such goods.

Inland Rubber Co., Chicago, Ill., has expanded its sales and service facilities in the Middle West by the establishment of depots in Aurora, Joliet, Rockford, Peoria, Springfield, Decatur, Chicago Heights, Hammond, Gary and South Bend.

The Detroit Rubber Products, Inc., 2841 East Grand Blvd., Detroit, Mich., is now marketing a Yellow Jacket paint spray hose which is resistant to duco and lacquer and will not rust or discolor fluid.

John H. Mulloy, mechanical supervisor at the Detroit plant of the United States Rubber Co., has resigned to become general manager and vice president of the Organ-Oxide Products Co. of Detroit. Mr. Mulloy was connected with the U. S. organization for thirty-four years.

New Western Headquarters for Federated Business Publications, Inc.

The Federated Business Publications, Inc., of which INDIA RUBBER WORLD is an operating unit, has moved its western headquarters to the palatial new skyscraper located at 333 N. Michigan Ave., Chicago, Ill. Scott Kingwill has been appointed office manager.

The companies operating in association with Federated Business Publications, Inc., include: Lyman Publishing Corp., Hetty Publishing Corp., Realty Periodical Corp., Conover-Mast Corp., Scientific Press, Inc., Sales Management, Inc. In addition to INDIA RUBBER WORLD, trade and business papers published by the company cover *Automotive Electricity, Building Investment, Carpet & Rug News, Distribution Economist, Draperies, Fountain & Candy Topics, Industrial Retail Stores, Mill & Factory Illustrated, Music Trade Review, Novelty News, Sales Management & Advertisers' Weekly, Soda Fountain, Talking Machine World, Tires and Tire Rate Book.*

Continuous tire production is here at last. At least a description of the process appears in this issue. ***See page 60.***

Head of Morgan & Wright Plant

Appointed in March, 1927, vice president and factory manager of the Detroit plant of the United States Rubber Co., William Kearns owes his success to hard work and close application, coupled with a conscientious regard for details which is responsible for his reputation as a thoroughly reliable, dependable and efficient executive.

His business career began in March, 1894, when he became associated with the

William Kearns

Morgan & Wright company in the tube finishing department. In 1904 he was made foreman in charge of various production departments, a position he held until his appointment in 1909 as night factory superintendent. The next step in his advancement was in 1912 at which date he was named assistant superintendent, to be followed by his promotion, in May, 1919, to the position of production superintendent. He was elevated in December, 1925, to the general superintendency, a position he held until his appointment as head of the U. S. Detroit plant.

A product of the West, Mr. Kearns was born January 20, 1874, in the town of Salem, Ore., and received his education in Chicago, Ill., attending the parochial grammar schools, Jesuit College, and the Metropolitan Business College. He is a veteran of the Spanish-American War, a member of the Duffield Camp. Mr. Kearns makes his home at Grosse Pointe, Mich.

Patent Royalties Not Taxable

An interesting decision has just been handed down by the Supreme Court which decided that patent royalties are not taxable under the income tax law of Massachusetts.

PRODUCTION OF MOTOR VEHICLES IN the United States during June, as reported to the Department of Commerce, was 396,714 of which 356,439 were passenger cars and 40,275 were trucks, as compared with 426,096 passenger cars and trucks in May and 321,967 in June, 1927.

New England

The Hood Rubber Co. will close July 28 to August 6, for the annual repair period. The mixing department will close one day earlier and open one day sooner than the manufacturing departments.

The Mason Tire & Rubber Co. has moved the New England headquarters from 348 Newbury to 41 Lansdowne St., Boston. Growing business in this district with the consequent need of larger sales quarters and warehouse space has necessitated the change in location.

Sears, Roebuck & Co. opened its Cambridge retail store on Thursday, July 12. The new store is the twentieth retail or class A store opened by the company, and is operating on department store lines selling various merchandise lines including tires, tubes, rubber footwear and sundries. This company made its initial entry into the Boston retail field a year ago, with the opening of a small store for the sale of tires, tubes and accessories on Commonwealth avenue.

E. H. Nahm recently of the sales promotion and service department of the Roessler & Hasslacher Chemical Co. has been appointed to the sales force of the Naugatuck Chemical Co., Naugatuck, Conn.

The Hood Rubber Co. is marketing "Suprex," a superior quality heel which is claimed to be lighter than the ordinary heel and is said to have abrasion quality equal to a tire tread. The novel construction of the heel consists of extra thick buttons at the rear edge with a heavy layer of rubber between them, both features designed to increase wear.

The F. C. Hersee Co., Watertown, Mass., has recently developed a new type of auto hood lacing made of rubber. The new lacing is 1⅛ inches wide and has a specially designed rib which fits tightly between the hood, cowl and radiator stopping rattles and squeaks and acting as a seal against water, oil and grease.

The Ellis Tire & Rubber Co., Boston, Mass., has opened another branch store at 685 Beacon St. that will serve as headquarters for the entire organization. A drive-in service will feature the new store where a large and competent force will be ready to repair all sorts of tire and wheel damages.

The Bristle Stretcher Co. is now installed in its new plant at Mansfield, Mass. The Bristle company manufactures cloth handling machinery and was formerly located in Lawrence, Mass.

The Fisk Tire Export Co. has moved its head office from 250 W. 57th St., New York, N. Y., to Chicopee Falls, Mass.

Harry Sadler has joined the staff of the Plymouth Rubber Co., Canton, Mass., which handles shoe factory supplies for the North Shore. Mr. Sadler will act as agent.

Donald Blake Webster, treasurer of the Clifton Mfg. Co., Jamaica Plains, Mass., maker of rubber coating, has become engaged to Miss Eleanor Zach also of Jamaica Plains. Mr. Webster is a graduate of the Massachusetts Institution of Technology and served in the World War as a first lieutenant. No definite date has been set for the wedding.

The Clifton Mfg. Co., Jamaica Plains, Mass., closed for inventory in some departments for one week and in others for only two days during the latter part of July. Business is so good this summer that the whole plant could not be closed for the full week as is usual during the semi-annual inventory.

The Converse Rubber Shoe Co., Malden, Mass., allowed the usual summer vacation to its employes. The rubber shoe department was closed from June 5 to July 2 and the tennis shoe department from June 16 to July 2.

A. Cushing has been appointed a director and vice president of the Alfred Hale Rubber Co., Atlantic, Mass. Mr. Hale graduated from Harvard College in the class of 1928 with an A.B. degree. The Hale company manufacture the "Rajah" soles and "Halesoles."

The Boston Shoe and Leather Show was held at the Hotel Statler July 9 to 11. The Cambridge Rubber Co. had a special display of "Raynshu" products for winter wear. The Alfred Hale Rubber Co. showed a new web grip sole for sport shoes. Other rubber companies to have displays were: The Goodyear Tire & Rubber Co.; The B. F. Goodrich Rubber Co.; United States Rubber Co.; Essex Rubber Co., and the Panco Rubber Co.

September Meeting Rubber Division A. C. S.

Two prominent rubber executives, Charles R. Boggs and John M. Bierer, are actively preparing for the fall meeting of the American Chemical Society to be held at Swampscott, Mass., Sept. 10 to 15. Charles R. Boggs, factory manager of the Simplex Wire & Cable Co., chairman of the Boston Group of the Rubber Division, is chairman of the publicity committee of the coming convention. John M. Bierer, technical superintendent of the Boston Woven Hose & Rubber Co., is chairman of the finance committee. Mr. Bierer is also advertising manager of the fall program and is preparing a souvenir book to be distributed at the meeting.

If you want to know who's who in the rubber industry read American Rubber Technologists now appearing in INDIA RUBBER WORLD. *See page 75.*

New Jersey

Some rubber manufacturers of New Jersey report that business is very good while others claim it is not up to normal. The mechanical rubber output has increased to some extent and some of the tire factories are receiving more orders since the cut in prices went into effect a short time ago. Shoe and heel manufacturers report that the output has dropped off a little and that this is to be expected at this time of the year. Rubber reclaimers are operating to capacity.

The Weartex Rubber Co., Trenton, N. J., has opened a branch office at 3210-3222 Philadelphia Ave., Baltimore, Md. The company manufactures rubber heels, soles and other footwear articles.

The Pocono Rubber Cloth Co., Trenton, N. J., is meeting with success with several new styles of golf bags made from rubberized cloth. The bags are of different colors.

William J. B. and Charles E. Stokes, prominent rubber manufacturers of Trenton, N. J., have presented a large portrait of their father, the late Joseph Stokes, to the new Masonic Temple. The two sons some time ago contributed $24,000 for the Joseph Stokes Memorial Library and the picture will hang in there. Mr. Stokes was the founder many years ago of Column Lodge, No. 5, Free and Accepted Masons and was a pioneer rubber manufacturer.

Whitehead Bros. Rubber Co., Trenton, N. J., reports business greatly increased during the past few weeks. The concern is now operating overtime in some of its departments.

William A. Howell, superintendent of Whitehead company, was a member of the Citizens' Committee appointed by the City Commission to arrange Fourth of July celebration.

C. Edward Murray, Jr., president of the Murray Rubber Co., Trenton, N. J., has returned from a business trip to Akron, O.

The Pierce-Roberts Rubber Co., Trenton, N. J., has completed an addition to its plant and this will enable doubling the capacity of some branches of the concern's business.

The Luzerne Rubber Co., Trenton, N. J., has disposed of a large tract of land to the Hofung Auto Wrecking Co. The rubber company had decided not to use the land after holding it for several years.

The Murray Rubber Co., Trenton, N. J., was awarded the contract by the State of New Jersey for furnishing pneumatic tires to the fleet of State cars for the current fiscal year. The award was made by the State House Commission on a bid of $33,247.96.

The Combination Rubber Co., Trenton, N. J., reports that business during the past month has been very good. During the past three months the concern opened 35 new accounts in the southeastern states and a few in the New England states.

The Thermoid Rubber Co., Trenton, N. J., announces that business increased considerably during June and that prospects for the coming month are very good.

The Acme Rubber Co., Trenton, N. J., is installing a 2,100 ton Watson-Stillman lead press for manufacturing molded hose, which will be in operation in about thirty days. This will be followed by duplicate installation.

Hamilton Rubber Co., Trenton, N. J., according to A. Boyd Cornell, general manager, has shown marked improvement in sales volume of both mechanical goods and tire production and indications point toward a steady increase.

The Puritan Rubber Mfg. Co., Trenton, N. J., is operating at 100 per cent capacity in order to take care of the volume business received on rubberized marble flooring. A new addition to the present plant is planned.

The Joseph Stokes Rubber Co., Trenton, N. J., is running at full capacity. Milton H. Martindell, secretary, feels optimistic over the business improvement.

The New Jersey Rubber Co., Lambertville, N. J., is operating at full time and has been busy for several months.

The Duratex Corp., Newark, N. J., has been purchased by the Atlas Powder Co., announcement to this effect having been made by Richards & Co., Inc., a subsidiary of the Atlas company. Pyroxylin and rubber coated fabrics are manufactured by Duratex.

Captain B. M. Mitchell, consulting engineer for The Manhattan Rubber Mfg. Co., Passaic, N. J., has been elected an honorary and life member of the American Society of Mechanical Engineers.

Receivership for Lambertville Rubber Co.

William E. Crowley, Lambertville, N. J., and Samuel Milberg, an attorney, Jersey City, N. J., have been appointed receivers of the Lambertville branch of the Goodyear Rubber Co., Middletown, Conn. Mr. Milberg has been serving as a temporary receiver, but a permanent receivership was affected to safeguard the interests of the property. Mr. Crowley was superintendent of the factory prior to the consolidation with the Middletown factory last February, but he does not contemplate that his appointment as one of the receivers will result in operation of the plant as it now stands. However, the offer made by Lambertville officials and the Chamber of Commerce in which Philadelphia rubber manufacturers are interested, will be considered by the receivers and they will have authority to accept it and make a sale. All the machinery that was moved to the Middletown plant has been sent back to Lambertville.

Royal Ustex tubes are made from rubber latex, and according to the manufacturer will outlast any casing or tube ever built. Look up the article in this issue. It will be found on Page 59.

New Plant for Carrier Corp.

The Carrier Engineering Corp., specialist in air conditioning, drying, processing and refrigeration, has announced the purchase of the four story factory and office building

located on a tract of about six acres at 850 Frelinghuysen Ave., Newark, N. J. The building offers a floor area of approximately 112,000 square feet.

"Bargains" in Tires

A daring scheme to defraud the public has recently been under investigation by the National Better Business Bureau, Inc., which had received numerous complaints from deceived purchasers of so-called bargains in tires. These were represented as products of internationally known companies, but in reality were worn out casings salvaged from junk piles, retreaded and peddled as new. The unfortunate customer was lucky if the tire brought him as far as his own garage door without a puncture.

Molds and other equipment of a company that had passed out of existence are frequently used and junk yards searched for discarded carcasses, preferably those of the better known corporations. They are stripped sufficiently to insert the camel back or other repair material, and a covering then vulcanized. Considerable attention is devoted to molding and finishing the retreaded tire which must bear a respectable trade name, have a serial number and size marked on, and altogether look rather well on the outside. It is wrapped exactly as a new legitimate tire fresh from the factory would be wrapped.

Attorneys for the United States Rubber Co., which with Goodyear, Goodrich, Firestone, Racine, Fisk, Kelly-Springfield, General, etc., are the principal sufferers from this form of gyping, have brought suit against one of these "manufacturers" for misrepresenting merchandise, and the outcome is watched with considerable interest by the general public which hopes for a discontinuance of this pernicious practice.

THERE ARE TWENTY-ONE CORPORATIONS manufacturing or handling rubber goods in Rhode Island that report a corporate excess this year of $100,000 or more. These report a total corporate excess amounting to $14,812,675.92 upon which a total tax of $58,310.81 is assessed.

Rhode Island

The Tubular Woven Fabric Co., Pawtucket, R. I., held the tenth annual outing of its employes recently at the Plum Beach House, Saunderstown, on Narragansett Bay. Among those who attended were E. Smith, vice president; Horatio N. Otis, secretary; William A. Whittaker, treasurer; E. Stream, purchasing agent; J. Kennedy, superintendent; R. Mount, superintendent of rubber division, and E. Alcott, New England salesman. All records for attendance were broken. After a program of sports and games a shore dinner was served, the prizes being awarded during the dinner by Fred Lawton. A baseball game between teams representing different departments was one of the day's features, while a wrestling match between Frank Farrell and Ted Thurrow was won by the latter. Miss Irene Sherman was awarded the prize for making the most points in the games while a similar prize for men was awarded to Ovila Carpentier.

Davol Rubber Co., manufacturer of druggists' sundries, is one of the concerns in Rhode Island that maintains a practically even schedule the entire year, while its business consistently increases so that expansion of its plant is frequently necessary. For a long time a printing department has been maintained for the printing of small labels, tags and similar supplies but the company now has under consideration the equipping of a regular printing department where all of its press work can be done.

Providence Tire & Rubber Co. has been appointed distributer for Ajax tires in Rhode Island and southeastern Massachusetts.

New England Rubber Co., 42 Ashburnham St., Providence, R. I., has made a general assignment to Joseph E. Adelson, for the benefit of its creditors. No statement has been made as to the amount of assets and liabilities.

The Columbia Narrow Fabric Co. plant at Shannock, R. I., has been overhauled and repaired. During this period many of the employes took long auto trips and a number visited Canada.

The Narragansett Rubber Co.'s buildings at Bristol, R. I., are being torn down.

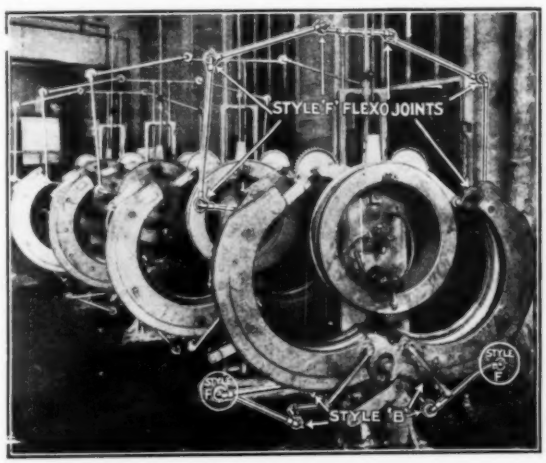
The National India Rubber Co., Keds division, at Bristol, closed July 21 for a two weeks' vacation during the annual inventory taking, operations being scheduled to resume August 6. The wire division closed in part for one week, beginning July 30. These shutdowns are of annual occurrence, according to Factory Manager Maurice Smith.

Annual Outing of the National India Rubber Co.

The National India Rubber Co., Bristol, R. I., held its first outing at Crescent Park, the "Coney Island of New England," on July 21. The festivities began early in the morning when the party gathered at the factory before 9 o'clock to be transported by motor trucks to the pleasure resort. Rivalry between the two factory divisions enlivened interest in the sports in which both men and women, old and young, participated. Prizes were presented to the winners by Maurice Smith, the factory manager.

A shore dinner was served in the dining hall and the numerous amusements at the park were well patronized during the day and evening, dancing in the Alhambra ballroom being one of the most popular attractions. A baseball game between teams representing the Millville plant of the Woonsocket Rubber Co. and the National India Rubber Co., was hard fought, with the Millville nine winning by a score of 8 to 5. The victors were presented with a silver loving cup.

John Aldeida's "10 Solids" representing the Wire Division won two straight pulls in the tug-of-war from Raymond Cavallaro's "Holdfasts," representing the Keds Division. Cigar lighters were presented to the winning team. In an exciting three-inning baseball game, Sam Smith's "Steamrollers" from the Wire Division defeated Raymond Cavallaro's "Bulldogs" from the Keds Division, the score being 5 to 3. It was a burlesque game and created considerable amusement.



A Battery of Kuhlke Molded Tube Vulcanizers Equipped with Flexo Joints

A good warm weather article to read is that on Page 65 covering drinking water systems.

Eastern and Southern

The Alberger Chemical Machinery Co., 103 Park Ave., New York, is the agent in New York for the H. G. Trout Co., of Buffalo, N. Y. The office is under the direct supervision of A. H. Alberger, an engineer of wide experience, whose association in the chemical machinery field is a valuable asset to the Trout organization.

Pynchon & Co., 111 Broadway, New York, N. Y., the well-known cotton exchange firm is prepared to execute orders for rubber futures on the New York Rubber Exchange and all other markets. David B. Rush is manager of the rubber department.

Frank B. McNulty and Miss Anna M. Narkum, of Ipswich, Mass., were married on June 14 in Brooklyn, N. Y., leaving after the ceremony for a honeymoon in the Pocono Mountains. Mr. McNulty is a business associate of his brother, Joseph A. McNulty, well-known importer of red oxide and pigments. The couple have returned to Brooklyn and are settled in their new home at 699 Ocean Ave.

The Industrial Chemical Co., 200 Fifth Ave., New York, N. Y., announces a change of name to the Industrial Chemical Sales Co., Inc. A general line of industrial chemicals is handled by the company of which Noel Statham is president.

The Motor Equipment Association is the name of the combined Automotive Equipment Association and the Motor & Accessory Manufacturers Association. M. L. Hemingway will be general manager and B. W. Ruark, associate manager.

Harry Hough has become a partner in the firm of Stagg, Mather & Hough, public accountants, now practising under the name of Stagg, Mather & Co., 141 Broadway, New York, N. Y. Mr. Hough recently resigned as president of The B. F. Goodrich Co.

The Firestone Tire & Rubber Co. plans to erect a $100,000 plant on the corner of Lafayette and Brush streets, Tampa, Fla.

Over Niagara Falls in a Rubber Ball

For the third time the 200-foot plunge over Niagara Falls has been negotiated, this time by Jean A. Lussier, a French Canadian of Springfield, Mass. He went over the Horseshoe cataract in a large red rubber ball, eleven feet in diameter, and when extricated had only a few minor bruises to show as a result of his thrilling ride.

The interior of the ball held a steel frame which was enclosed between two canvas linings and a harness like affair was supplied to which Lussier was strapped. A weight kept him upright.

Lake Erie Engineering Corp., 268 Perry St., Buffalo, N. Y., is enjoying a prosperous season with prospects bright for a continuation during the coming year, according to R. E. Dillon, general manager. The company manufactures special and standard hydraulic presses, accumulators, valves, press elevators, rolled steam plates, and rubber mat presses, all especially applied to the rubber industry.

Imperial Color Works, Glen Falls, N. Y., manufactures a complete line of organic colors suitable for use in the rubber trade. A. F. Brown is general sales manager.

The Speck-Marshall Co., 207 Market St., Pittsburgh, Pa., recently elected the following officers: David J. Marshall, president; William B. Trainer, vice president and secretary; and C. C. Taylor, treasurer. The company has been in existence thirty-three years and is the Pittsburgh selling representative for The B. F. Goodrich Rubber Co., Akron, O., and the Belmont Packing & Rubber Co., Philadelphia, Pa.

O. S. Sleeper, formerly of the O. S. Sleeper Co., and, until his present connection, associated with the Buffalo Foundry & Machine Co., has been appointed chief engineer of the H. G. Trout Co., Buffalo, N. Y. The Trout company manufactures chemical equipment and vacuum apparatus.

The Stetson Rubber Co., East Butler, Pa., plans the erection of a new plant which will cost, with equipment, about $85,000, and consist of three one story units, each about 40 by 100 feet. The company was recently organized to produce retreaded tires and kindred goods.

The Manhattan Rubber Mfg. Co., Passaic, N. J., has announced the appointment of David Newhall as manager of the company's Philadelphia branch, replacing John S. Latta who recently resigned.

Willson Starts Tire Paper

Harvey Willson, assistant general manager of the Rubber Association of America, Inc., for the past eight years, has resigned and will devote his time to the organization of the Coverage Publishing Corp., in which undertaking he will be associated with P. L. Palmerton, publisher of *The Rubber Age*. The company plans to publish a new monthly tire dealers' paper to be known as *Tire Topics*.

To Correct an Error

The INDIA RUBBER WORLD, in its July issue, erroneously lists among the members associating themselves with the Rubber Institute, A. H. Canfield as representing the Canfield Rubber Co. Mr. Canfield has no connection with that company, but is president of The H. O. Canfield Co., Bridgeport, Conn.

Expansion of the H. G. Trout Co.

An event of unusual interest to the chemical and allied industries is the recent appointment of D. S. Secord as vice president and general manager of the H. G. Trout Co., of Buffalo, N. Y., manufacturer of chemical machinery and vacuum apparatus. He will have full charge of the extensive factory and of the rapidly expanding sales organization, and it is expected that under his recognized executive and organizing ability, the company will show marked development and expansion and soon become one of the leaders in its field. Actively associated with Mr. Secord are his two sons, A. J. and Jack Secord.

John J. McFarlin, who for the past five years has been with the J. P. Devine Co., Buffalo, is now serving as sales engineer for the Trout organization.

Branch offices of the company will shortly be opened in other important industrial and commercial centers of this country.

The Trout company has operated under its present name for over half a century. It was originally started in 1844 under the name of the Shepard Iron Works, and was reorganized in 1870 as the King Iron Works. The late H. G. Trout entered the service of the company in 1849 as an apprentice and developed with the business until 1872 at which time he assumed control and ran it under his own name for 36 years, after which he incorporated under the name of H. G. Trout Co., continuing the management until his death in 1911. H. C. Waldow is now president of the organization with which he has been associated for over thirty years.

International Acceptance Bank

At the regular directors' meeting of the International Acceptance Bank, Inc., held July 5, George V. McLaughlin, formerly New York state superintendent of banks, and now president of the Brooklyn Trust Co., and George M. Shriver, executive vice president of the Baltimore & Ohio R. R., were elected to the board. The directors announced, at the same meeting, declaration of the regular quarterly dividend of $1.50 a share on common stock, payable July 16, 1928, to stockholders of record on July 5.

Museum Gets Edison Laboratory

Henry Ford's museum of American antiques will shortly house the little old antiquated laboratory where Thomas Edison has carried on his discoveries for the past forty years at his home in Fort Myers, Fla. A modern laboratory will replace the old building to allow Edison, who now devotes the major part of his time to experiments in rubber, to continue his research.

Pacific Coast

Pacific Goodrich Activities

Pacific Goodrich Rubber Co. stepped up daily tire production from 2,500 in June to 3,000 in July. Inner tube output for mid-July averaged 2,300 daily. Meanwhile sales and work forces have been increased. It is unlikely that much will be done in the near future regarding footwear manufacture, but an early start will probably be made in manufacturing light and heavy hose, belting, and general mechanicals.

Edward Barry, resident engineer of the new plant, has returned from a five weeks' educational tour throughout the Northwest. He addressed thirty-one meetings of tire dealers, members of various clubs, and displayed motion pictures depicting the history of a tire from the collection of rubber latex to the final operation in casing making.

W. R. Hucks of the Akron plant has taken the place of Arthur Kelly as chief compounder, Mr. Kelly having been recalled to the chemical engineering department at the parent plant. Although but a short time at the new plant, Mr. Kelly had made many warm friends in the Southwest metropolis.

On a gigantic signboard on top of the Goodrich main building was painted a welcome to the aviators who came to Los Angeles on the recent national air tour. It was stated that 23 out of the 25 planes were equipped with Silvertown airplane wheels.

A recent Goodrich visitor was Frederic G. Hérosé, who was on his way from Akron to Singapore, where he will open a rubber brokerage office which will serve the Goodrich interests exclusively.

American Rubber Mfg. Co., Park Ave. and Watt St., Oakland, Calif., recently executed an exceptionally large order for railroad hose and is working to capacity on heavy conveyer and transmission belting. The works are running two shifts daily, and most departments may be put on three shifts soon, according to Col. J. L. Dodge, treasurer and factory manager.

Samson Tire & Rubber Corp., Los Angeles, Calif., has just closed two of the largest dealer accounts in the country and notes a considerable and steady increase in business generally. The original works at Compton are working to capacity with three shifts daily, and new business has required much stepping up of production at the No. 2 plant in San Diego. First Vice President B. F. Schleicher has been devoting the past six weeks to a survey of trade conditions as far as the Atlantic coast with a view to arrange for increased production and improving distribution. President A. Schleicher of the Samson corporation is one of a syndicate of business leaders who recently acquired control of the Fidelity Savings & Loan Society, a Los Angeles concern with $28,000,000 assets.

Huntington Rubber Mills, Macadam and Nevada streets, Portland, Ore., has, as the result of an exhibition recently made at the meeting of the American Medical Association in Minneapolis, received numerous orders for the unique rubber obstetrical manikin originated by this concern and recently described in the INDIA RUBBER WORLD. Already it has been accepted by some of the leading medical colleges of the country and abroad. The company's ordinary business in heels and soles has been running exceptionally well with excellent prospects for the fall. Good progress is also reported in miscellaneous mechanical rubber goods.

Coast Tire & Rubber Co., East 12th St. and 50th Ave., Oakland, Calif., is constantly increasing its output of casings and tubes. The company distributes solely to direct factory branch stores.

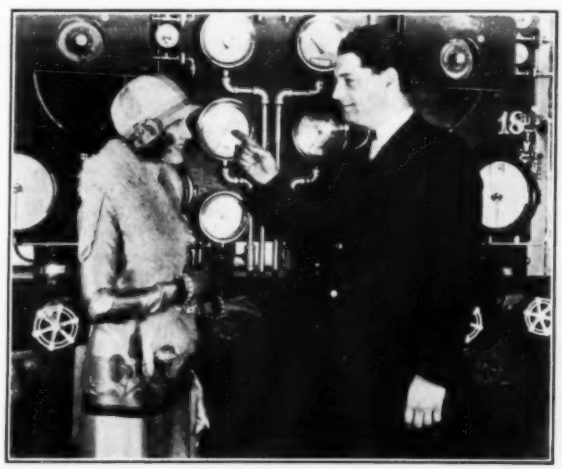
United States Rubber Co. finds summer business for 1928 well advanced over the total for the mid-year season of 1927.

Unique Duplex Curing Control

A UNIQUE installation of standard control boards with instruments especially arranged for the most efficient service in controlling the vulcanizing of tires with steam on the outer and hot water on the inner surface is one of the striking features of the up-to-date equipment of the new Pacific Goodrich Rubber Co. plant in Los Angeles. The layout was designed jointly by Resident Engineer Edward Barry and engineers of the C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.

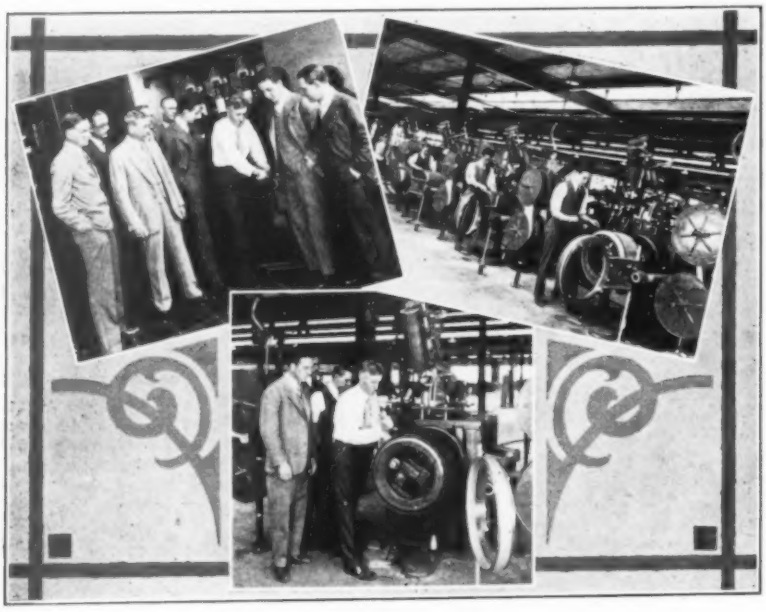
Formerly for curing tires a steam tender was employed, and instruments on which dependence for proper curing was placed were a steam chart, a wall clock, a pressure gage, and a thermometer, the latter usually adjoining the hot tire press pit. If a vulcanizer attendant were always alert all usually went well, but if he were not strictly on the job and forgot for once to notice chart or clock or to turn a valve all might not go well at all; and the company might suffer much loss in tires spoiled through ill-regulated heating.

In the new factory it was decided to take no chances whatever on guessing or possible inattention. The entire vulcanizing process had to be scientifically and infallibly controlled with mechanical devices. In the newly installed system of automatic control the instruments are set to regulate steam pressure, temperature, and condensation in the tire molds during the curing process, and at the same time control pressure and temperature within the hot water curing bags. Provision is also made for not only the preheating of the molds but their cooling after curing. Once the cam of the regulator is set for a definite time and temperature, as well as pressure, the action of the entire apparatus is so positive and unerring that there is no anxiety. Cure runs true to form with a precision almost uncanny. Even over the longest periods temperature variation at the highest range may be scarcely one degree. When the desired cure has been effected the apparatus shuts off the steam, as it can also open the vents and signal an attendant.



In the old system thermometers were placed often in blistering, inconvenient places, but now they are brought to the panel board set in a very accessible location, and there they are shown doubly on a mercury thermometer with a Tag-Hespe red reading column and a dial recording thermometer. One of the many panel boards of the factory is shown in the accompanying illustration. On the right side are set the automatic gages and other instruments for controlling the steam and on the left those for regulating the hot water, with the recording devices giving a minute and graphic history of the cures effected in each of the many vulcanizing presses in which columns of 35 casing filled molds get not only steam and hot water but also 226,000 pounds hydraulic pressure.

J. C. Herbert, secretary of the Goodrich company, is shown explaining the operations of a battery of these ingenious controls to Miss Mary Brian, motion picture actress, and a recent visitor at the Goodrich factory.



Firestone Starts California Plant

Harvey S. Firestone is shown in the illustration on the left turning on the power at the new Los Angeles plant of the Firestone Tire & Rubber Co. of California. Interested spectators, reading from left to right are: H. S. Myers, engineer in charge of plant; T. C. Meyers, engineer in charge of construction; Leonard Firestone, student at Princeton; Russel Firestone, executive head of Pacific plant; and Harvey S. Firestone, Jr., vice president of Firestone Plantations Co., Inc.

The illustration at the right shows Mr. Firestone and his three sons building tires in the plant, with a close-up of Firestone, in the lower picture, showing them how it is done.

This is particularly true of tires in the whole western territory. Not only were sales given a decided impetus by the mid-June price cut but dealers are in better humor as the U. S. company has put them in the way of making a better net profit on sales. Mr. Brady had as a mid-July business guest J. B. Magee, manager of the Southern California and Arizona territory. Mr. Brady announces the appointment of F. E. Stringer of the U. S. company's New York branch as manager in charge of mechanicals in the Los Angeles district.

Goodyear Tire & Rubber Co. of California is still running its Los Angeles plant on a 10,000 a day schedule, with tubes somewhat less. Molds for nearly all sizes of the new Double Eagle tires have been installed, and the demand for this tire is very heavy. Even double shifts have not afforded sufficient relief, and another may be added shortly. A recent visitor was L. O. Guinther, manager of airplane tire sales at the Akron factory. He represented Goodyear in the National Air Tour, making the flight in a Ryan monoplane for the purpose of adding to Goodyear's experience in airplane transportation and its rubber requirements, and of servicing the many airplanes in the reliability tour. Goodyear provided tire replacement stocks at all the principal control points.

Pioneer Rubber Mills, San Francisco, Calif., reports that it is fairly swamped with orders despite overtime in all departments. Heavy belting is in especially strong demand, fire and garden hose are holding up well, and sales of general mechanicals continue good. While domestic business remains good, a much better percentage of gain is noted in exports to the Philippine Islands, Malay states, and India. Trade with China and Japan is good but less active than usual. A good business is being built up on the South American west coast.

The Goodyear tire repair school at the Los Angeles plant is conducted by B. J. Fox, manager of sundries sales. The course includes factory trips, lectures by technicians, as well as instruction in cost accounting, advertising, and sales methods.

Firestone Tire & Rubber Co. of California plans to formally open its Los Angeles plant about the first week in September. Although since December 15, when ground was broken and June 18, when President Harvey S. Firestone, Sr., made the first tire, all records for building and equipping a factory of such magnitude had thus been broken, there remains much exterior work to be done, especially in connection with streets. An ingenious invention of Firestone engineers is a machine for automatically assembling materials for sidewall construction. Work hitherto done by several tire builders is now effected better and quicker by one machine. Factory Manager R. J. Cope and General Sales Manager J. P. Patterson of the Firestone (Los Angeles) personnel have returned from a tour through eleven western states, having visited the Firestone branches between the Rockies and the Coast.

California Rubber Products Co., 257 S. Spring St., Los Angeles, Calif., is now the Neversoil Rubber Products Co. Charles M. Smith is general manager. The company makes rubber aprons for doctors, dentists, beauty parlor operators, cannery workers, laboratory attendants, and special goods for undertakers. It is stated that 90 per cent of the sales are made east of the Mississippi.

Eno Rubber Corp., Los Angeles, Calif., is exceptionally busy, gross business for July, 1928, being 24 per cent over July, 1927; and two and three shifts being employed at its plant in Torrance. In addition to a strong demand for oil field rubber goods, the company finds business increasing fast in airplane rubber fitments, in sport balls, inflatable seat cushions, and other novelties. Australia taking one of the largest recent shipments.

West American Rubber Co., Los Angeles, Calif., is unusually busy filling orders for the Mid-Continental, Far East, and South American oil fields. The exports are chiefly packing and heavy hose in which the company specializes. Demand for general mechanicals also holds up well.

Goodyear Tire & Rubber Co.'s Portland, Ore., branch having proved inadequate, a new one of steel and concrete is being built on Raleigh St., between 14th and 15th streets. H. S. Quackenbush is in charge.

Rubber Drip Catcher for Umbrella

If an absent-minded caller leaves his rain-soaked umbrella on his host's carpet he need not fear a rebuke if he has taken the precaution to have it fitted with a soft rubber drip catcher invented by a western man. It resembles a small parachute or a funnel, the apex ending in an inch tube which fits on the end of an umbrella rod. The cone spreads when the umbrella is opened, but when the latter is closed the cone opens wide enough to catch the run off.

THE INVENTOR OF A NEW DUPLEX TIRE, A solid within pneumatic, may not be as pessimistic as the man who wears suspenders with a belt, but at least he does not like taking any chances.

Canada

As predicted in a recent issue of the INDIA RUBBER WORLD a reduction on most mechanical rubber goods became effective July 3. The new prices follow reductions in the crude rubber market, and also take care of the sales tax reduction made earlier in the year. Since that date all invoices for mechanical rubber goods have had one per cent of the net total deducted from the face of the invoice to allow for the sales tax reduction, but this will not now be necessary, as the new discounts cover this reduction. Garden hose has not been effected by the change as the prices set at the start of the booking season are still in force. Articles affected by the decline in price include rubber transmission belting, steam hose, pneumatic air tool hose, and corrugated matting. Reductions in the price of tires and tubes vary according to type and size, ranging from five to twenty per cent.

The summer weather has stimulated the sale of outing and athletic footwear and considerable business is being done in boys' and girls' rubber soles and with the closing of the schools this business is now at its peak. Lumbermen's rubbers are largely taking the place of larrigans and the demand for the former is steadily increasing.

Richard Ingleton of Gutta Percha & Rubber, Ltd., Saint John, N. B., was one of the speakers at the recent Canadian Credit Men's Association convention.

Columbus Rubber Co. (Montreal) Ltd., is contemplating opening a branch office and warehouse in Regina, Sask., where a complete stock of Columbus rubber footwear and outing shoes will be carried.

Goodyear Tire & Rubber Co. of Canada, Ltd., reports that all three plants are operating at maximum notwithstanding the additions made to plant and equipment last year. Both dealers' and car manufacturers' business shows a material gain over last year, and is the largest volume of business this company has ever enjoyed.

Dominion Rubber Co., Ltd., is busy in all factory production departments whether it be Fleetfoot outing shoes, rubber footwear, Dominion and other brands of tires.

C. N. Candee, president of Gutta Percha & Rubber, Ltd., Toronto, has been appointed a member of the Executive Committee for the Ontario Section of the Canadian Manufacturers' Association.

General Tire & Rubber Corp. of Canada, Ltd., has been granted an Ontario charter with head office at Toronto, Ontario. Capitalization $50,000. The ratepayers of Oakville, Ont., where the factory plant is located will shortly vote on the new by-law for a fixed assessment of $1,000 for ten years. In return the company will undertake to employ a daily average of 40 hands.

A. E. King, assistant general manager Dunlop Tire & Rubber Goods Co., Ltd., Toronto, recently addressed members of the Canadian Credit Men's convention held in Saint John, N. B., and Halifax, N. S.

Rubber Imports

Total imports of rubber during May amounted to $1,763,760 as compared with $2,734,066 for May last year. Crude rubber imported in May was valued at $1,228,649, as against $2,234,161 for 1927. The quantity imported last month was little over three quarters of a million pounds less than for May, 1927.

Perfection Rubber Co., Ltd.

Operations will soon be started by the newly organized Perfection Rubber Co., Ltd., 524 Insurance Exchange Bldg., Montreal, Que.

Ample capital has been provided for this company to operate comfortably on the present intended production schedule of 200 tires and 400 tubes per day up to 600 tires and 1,200 tubes daily, the latter being the present capacity of the plant, together with a daily production of approximately 12,000 pairs of rubber heels and soles. Later the company intends to add rubber footwear to its line.

The officers of the company are as follows: Oscar Dufresne, president; Hon. J. L. Perron, M. L. A., K. C., vice president; Hugo Wellein, secretary and treasurer; and F. E. Partridge, managing director.

N. T. D. A. Plans for November Meeting

Preliminary plans for the convention of the National Tire Dealers Association, to be held in Boston, November 20 to 22, include an address by General L. C. Andrews, director general of the Rubber Institute, Inc. A great deal of interest is manifested in General Andrew's address by all the members.

Other speakers listed to appear are Frederick C. Hood, president of the Hood Rubber Co.; Roger Babson, statistician; F. J. Willard, Lowell Equipment Mfg. Co.; and Dr. Stratton of the M. I. T.

Tire Specifications

The Federal Specifications Board has issued proposed specifications of the U. S. Government for bicycle tires, single tube and clincher. The board will be glad to receive any comments or suggestions as to changes in these specifications but such criticisms must be sent not later than Aug. 23 to receive attention from the technical committee considering the subject.

Essex-Wearite Sole

The most thorough and exacting tests have proven that the Essex-Wearite soles, manufactured by the Essex Rubber Co., Trenton, N. J., do not crack or fail at the stitching and wear longer

than the average sole. The designed tread is exceedingly good looking and attractive and the sole may be had in either black or tan. It is made for every line of footwear, from infant's to men's.

Velvetex

Velvetex is a soft form of carbon black of the high-yield type, which has proved very interesting as a high grade filler for frictions, foot-wear and mechanical rubber goods. Velvetex is a compound form of carbon, carrying within desirable limits a softening and dispersing agent, and is, of course, limited to the class of work which requires a quality pigment of non-reinforcing character.

Fumonex

Fumonex is announced as another form of carbon, ready for the rubber trade. This black occupies a position intermediate between Micronex and Velvetex. It represents a higher yield carbon characterized by special qualities which make it of particular interest to the footwear, solid tire and mechanical compounder. Its quality of ready workability in manufacturing operations, including greater ease in mixing and calendering, invites the attention of the footwear manufacturer. These same qualities, together with ready tubing or extrusion, and the outstanding qualities of greater resilience and lower power loss, render Fumonex of unique value for use in solid tires and in those new automotive lines where rubber is employed for its shock absorbing and cushioning qualities.

ACCORDING TO *Our World Trade*, cotton cloth, duck and tire fabric ranks sixteenth and automobile tires twenty-first among the fifty chief exports according to value, January-March, 1927.

The importance of litharge, lime and magnesia as vulcanization accelerators is fully treated in the leading article on page 55 of the present issue.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
1124	Rubber apron manufacturers.
1125	Importer of sponge rubber products.
1126	Rubber cutting knives.
1127	Makers of transparent water bottles.
1128	Utilization of worn out tires.
1129	Manufacturers of gutta percha pipe.
1130	Gravitometer.
1131	Rubber soling.
1132	Manufacturers of rubber novelties.
1133	Sole crepe.
1134	Dipping machines.
1135	Manufacturers of ladies overshoes enclosed in small containers.
1136	Firms making soft rubber crown of thorns.
1137	Barnard molded hose.
1138	Hard sponge rubber material.
1139	Crimping and seaming machine.
1140	Viscosimeter operating on the principle of a miniature churn.
1141	Information regarding the manufacture of toy balloons.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country	Purchase or Agency
31,846	Raincoats	Calcutta, India	Both
31,880	Sport goods	Johannesburg, South Africa	Agency
31,892	Hospital sundries	Cartagena, Colombia	Agency
31,936	Tires and tubes	Addis Ababa, Ethipoia, (Abyssinia)	Either
31,937	Bathing slippers	La Guaira, Venezuela	Purchase
31,938	Puncture-proof tires	Bilbao, Spain	Purchase
31,939	Druggists' sundries	Zagreb, Yugoslavia	Agency
31,940	Druggists' sundries, packings and tires	Santiago, Chile	Agency
31,942	Canvas top shoes	Calcutta, India	Both
31,950	Stationers' goods	Palermo, Italy	Agency
31,951	Druggists' sundries and specialties	Budapest, Hungary	Agency
31,971	Packings and rubber goods	Copenhagen, Denmark	Puchase
32,013	Heels	Berlin, Germany	Agency
32,022	Hose pipes	Dresden, Germany	Purchase
32,056	Belts, insulators and washers	Halle, Germany	Agency
32,057	Galoshes	Belgrade, Yugoslavia	Agency
32,072	Erasers	Rio de Janeiro, Brazil	Agency
32,075	Tennis balls and shoes	Buenos Aires, Argentina	Agency
32,079	Belts	Dresden, Germany	Purchase
32,114	Rubber scrap	Hamburg, Germany	Agency
32,131	Tires, automobile	Calcutta, India	Both
32,151	Bathing caps	Barcelona, Spain	Agency
32,164	Rubberized cloth and rubber goods	Santiago, Chile	Agency
32,182	Balloons	Johannesburg, South Africa	Agency
32,193	Aprons and babies' rubber pants	Sydney, Australia	Agency
32,194	Specialties and druggists' rubber sundries	Vienna, Austria	Agency
32,263	Tires	Hamburg, Germany	Agency
32,277	Footwear	St. Thomas, Virgin Islands	Agency
32,285	Heels and soles	Buenos Aires, Argentina	Agency

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
1993	Turkish Tire Market.
1999	Italian Tire Market.
2000	Rubber Sundries in Alsace-Lorraine.
2007	Reclaimed and Scrap Rubber in Japan and Australia.
2008	United States Tire Exports.
2009	United States Exports of Rubber and Balata Belting.
2010	Italian Tire Exports First Quarter of 1928.
2014	Rubber Footwear Exports.

Rims Inspected and Approved by The Tire & Rim Association of America, Inc.

Rim Size	June, 1928 Number	June, 1928 Per Cent	6 Months, 1928 Number	6 Months, 1928 Per Cent
Motorcycle				
24 x 3	3,371	0.1	21,171	0.2
26 x 3	7,190	0.3	27,388	0.2
28 x 3	.....	...	753	0.0
Clinchers				
30 x 3½	73,155	3.0	248,531	2.0
31 x 4	.....	...	1,968	0.0
18" Balloons				
18 x 3½	.....	...	9,362	0.1
18 x 4	79,620	3.3	689,040	5.3
18 x 3.25	24,453	1.0	39,738	0.3
18 x 4½	24,666	1.0	78,299	0.6
18 x 5	.....	...	78	0.0
19" Balloons				
19 x 2.75	6,353	0.3	6,353	0.1
19 x 3½	208,479	8.6	1,169,779	9.0
19 x 4	193,368	8.0	1,190,374	9.2
19 x 3.25	.....	...	4,741	0.0
19 x 4½	116,168	4.8	569,953	4.4
19 x 5	5,813	0.2	7,503	0.1
20" Balloons				
20 x 2.75	28,112	1.2	32,160	0.3
20 x 3½	20,640	0.9	334,230	2.6
20 x 4	359,038	14.7	1,931,832	14.9
20 x 4½	35,246	1.4	197,899	1.5
20 x 5	115,314	4.8	353,532	2.8
20 x 6	10,033	0.4	64,456	0.5
21" Balloons				
21 x 2.75	594,418	24.5	3,357,462	25.7
21 x 3½	148,419	6.1	441,096	3.4
21 x 4	28,952	1.2	404,997	3.1
21 x 4½	14,183	0.6	234,975	1.8
21 x 5	1,084	0.0	7,240	0.1
21 x 6	1,330	0.1	2,715	0.0
22" Balloons				
22 x 3½	.....	...	1,509	0.0
22 x 4	.....	...	1,565	0.0
22 x 4½	810	0.0	1,450	0.0
High Pressure				
30 x 3½-23	3,390	0.1	30,337	0.2
31 x 4-23	.....	...	640	0.0
32 x 4½-23	18,164	0.7	46,735	0.4
32 x 4-24	10,309	0.4	40,120	0.3
33 x 4½-24	.....	...	406	0.0
32 x 3½-25	.....	...	.....	...
33 x 4-25	548	0.0	1,841	0.0
34 x 4½-25	204	0.0	4,331	0.0
20" Truck				
30 x 5	184,315	7.6	991,054	7.6
32 x 6	59,657	2.5	221,250	1.7
34 x 7	15,041	0.6	62,364	0.5
36 x 8	4,851	0.2	32,890	0.3
40 x 10	844	0.0	2,986	0.0
22" Truck				
36 x 7	4,989	0.2	7,787	0.1
38 x 8	.....	...	200	0.0
24" Truck				
34 x 5	3,674	0.1	12,712	0.1
36 x 6	3,757	0.2	23,739	0.2
38 x 7	11,400	0.5	33,959	0.3
40 x 8	5,532	0.2	17,905	0.1
44 x 10	316	0.0	796	0.0
Airplane				
12 x 3 SS	8	0.0	19	0.0
18 x 3 SS	.....	...	56	0.0
20 x 3½ SS	800	0.0	1,371	0.0
20 x 4 SS	518	0.0	538	0.0
21 x 4 SS	21	0.0	21	0.0
20 x 5 SS	44	0.0	52	0.0
20 x 6 SS	199	0.0	2,265	0.0
18 x 4 Cl	657	0.0	5,516	0.0
Total	2,429,453	...	12,974,029	...

Motorists' Expenses

Figures compiled by The American Motorists' Association show that each motorist in the United States spent $229 in the operation and maintenance of his car. Fuel and lubricants proved the largest item, amounting to $101, or 44 per cent, while the average tire bill was only $40.

These figures do not take into account depreciation which averages about $136 per year, taking $953 as the average retail price per passenger car based on a seven-year life expectancy. This figure, added to the upkeep cost of $229, brings the general cost of operation of a motor car, plus depreciation, to $365 per year, or one dollar a day.

The Rubber Industry in Europe

Great Britain

Production and Consumption

Very optimistic estimates from the producers' point of view have been recently published regarding production and consumption for the current year and 1929. These estimates are based on the supposition that rubber prices will remain at about the present level, when it is thought probable that production for the current restriction year, including such additional tapping as Malayan estates may do in anticipation of free export, will fall short of consumption for 1928 by some 50,000 tons.

ESTIMATE OF CONSUMPTION

	1928 Tons	1929 Tons
United States	405,000	425,000
United Kingdom	50,000	53,000
Germany	45,000	50,000
France	35,000	40,000
Canada	30,000	33,000
Japan	21,000	25,000
Russia	18,000	25,000
Italy	15,000	16,000
Australia	12,000	15,000
Belgium	8,000	10,000
Central Europe	3,000	4,000
Scandinavia	3,000	3,000
Holland	2,000	2,000
Spain, Portugal	2,000	3,000
Others	3,000	3,000
Totals	652,000	707,000

ESTIMATE OF PRODUCTION

	Nov., 1927-Oct., 1928	Nov., 1928-Oct., 1929
Dutch East Indies	215,000	225,000
Ceylon	60,000	65,000
Malaya 60 per cent	190,000	320,000
Additional	60,000	.....
Siam	2,500	2,500
India	10,000	11,000
Cochin China	8,000	9,000
Sarawak	10,000	11,000
Borneo	6,000	7,000
Wild and others	36,000	35,000
Totals	597,500	685,500

It is suggested that before long, what is called "the rest of the world," which is now at the beginning of the motor transport development through which the United States passed during the period 1914-1925, would increase consumption to such an extent that Europe's population of 300,000,000 to 400,000,000, for instance, might within a decade very well be using some 700,000 tons as against the 400,000 tons which America's 125,000,000 population is now consuming. Finally, in spite of all, the commodity is at present in a more genuinely healthy position than it has been at any time since the end of the war.

Rubber in Bridge Construction

Excellent results have been obtained by inserting a strip of rubber between the planks and steel girders of a bridge, according to W. Roger Sanguineth in the *Engineer*. Timber decked bridges are still common in British colonies and with the usual type of decking, the planks and girders deteriorate very rapidly owing to the timber becoming "nail-sick." Mr. Sanguineth tried unvulcanized strips of pure blanket rubber, ½-inch thick and 8 inches wide, the width of the top flange of the girders. The rubber was laid over the two central girders only and the decking secured to the outside girders.

The bridge was 300 feet long and several hundred motor trucks and cars crossed it daily. After about four years the planks were found to be in perfect condition, the rubber was apparently as good as the day it was put down, and no rattle was noticed. An important point to be observed was not to pierce the rubber, consequently the decking was secured by bolts with lugs under the flanges of the steel girders.

Forward Sales

Should a company engage in forward contracts at present low prices? Some estates, at least, think this a good policy, for we learn that Sungei Terain Rubber Estates Ltd. have sold forward 180 tons at an average of 8 17/24 pence c. i. f. New York, equal to 9½ pence London. This accounts for four-sevenths of the company's crop. Incidentally it is expected to reduce the costs to 6½ pence per pound f. o. b.

The Malacca Rubber Plantations have also sold forward largely and they have contracts covering 1,260½ tons at an average price of 10.74 pence per pound to be delivered from now to the end of 1929.

United Sua Betong Rubber Estates report that they have sold forward for 1928 1,005,760 pounds at an average of 1s. 2.603 pence and for 1929, 2,246,720 pounds at an average of 1 shilling 0.05 pence.

Anglo-Java Rubber & Produce Co., Ltd., has sold forward for 1928, 2,251,200 pounds at the equivalent of 10.74 pence per pound, London, and for 1929, 2,150,400 pounds at the equivalent of 9.32 pence per pound, London.

Colin Macbeth to Specialize in Consultative Work

The restrictive agreement between Colin Macbeth, F. I. R. I., M. S. A. E., M. I. A. E., and the Dunlop Rubber Co. having expired, Mr. Macbeth is now free to place his services at the disposal of tire manufacturers in a consultative capacity. His work in tire development is known the world over, his inventions being sufficient testimony of his mechanical and inventive skill.

Mr. Macbeth will be available to his clients at all times from his office, 67 **Norwich Union Chambers**, Congreve St., Birmingham, England.

British Notes

The new factory of the India Tire & Rubber Co. is nearing completion, and already a start has been made with the production of automobile tires. The works, situated in Inchennan Rd., not far from Renfrew, have been equipped with machinery from America. The key men for each department have also come across from America. It is said that the Renfrew labor exchange is watching developments with much interest with a view to supplying the necessary labor.

At least one instance has come to our notice where directors show proper consideration of the effect of present conditions on company's affairs. The chairman of the Bukit Selangor Rubber estates at a recent meeting announced that directors would postpone drawing their fees until the company was once more in a position to pay dividends.

The chairman of the Kuala Nal Kelantan Rubber Co. stated in the course of his speech that for some inexplicable reason Kelantan properties had been placed on a standard of output far beyond anything they were able to achieve. The Kuala Nal company throughout the restriction period had a standard of 450 pounds an acre so that they were not only able to tap practically to capacity during the whole period, but had accumulated coupons to such an extent that they never had to bother about export licenses. It seemed, said the chairman, that only those estates near a central control bear the brunt of restriction while the outlying estates tapped all they could. And then there are British shareholders and producers, too, who are indignant at the Dutch for not having joined restriction and having placidly allowed the British to carry the restriction alone!

J. C. Ferrée has commenced business as a rubber dealer at No. 7, Mincing Lane, London, England. Mr. Ferrée was formerly associated with Heilbut Symons & Co., Ltd., London, and was a director of the Eastern Rubber Co., Ltd., Singapore, E. A. Barbour, Ltd., Singapore, and the Francis Peek Rubber Export Co., Ltd., Batavia, but has resigned the directorship of these companies.

J. Schnurmann, Downham Mills, Tottenham, London N. 17, England, is the agent for De Haën's chemicals for the rubber trade, which include crimson and golden sulphides of antimony, resins, reclaimed gutta percha and balata, etc.

Hungary

The Hungarian branch of the Kabelfabrik Felten & Guilleaume reports very good business over last year. Net profits were almost 1,000,000 pengö. The capital was raised from 2,600,000 pengö to 3,750,000 pengö.

Germany

German Rubber Combine

The local press is at the moment fully occupied in discussing reports concerning an important concentration in the German rubber industry. Even before the war attempts, led by the Continental Caoutchouc und Gutta Percha Compagnie, Hannover, were made to bring about a fusion of the leading German rubber firms, but only the Excelsior would consider the plan. In the meantime, however, conditions have become ever more acute in the rubber industry; the chief concerns also suffered heavy losses as a result of the situation in crude rubber and in the most favorable instances were forced to withhold dividends.

Price conflicts in all branches of the industry and strong foreign competition in the tire business exercised additional pressure on the financial status of the individual works so that the thought of concentration for the purposes of lowering costs and increasing efficiency became more welcome, and as regards one concern at least—the Harburger Gummiwaren Fabrik "Phœnix"—it is known that far-reaching negotiations have been conducted and a fusion with the Continental seems imminent.

Other reports, however, have it that a community of interests in connection with tire production only is being considered, and it is noted that these last reports have not been contradicted so far. The shares of the companies interested have reacted on the reports and both Phœnix and Continental stock went up.

In addition to Phoenix, Calmon and Peters Union have also been mentioned. These two concerns are apparently still hesitating, but since they as well as the Continental and Phœnix concerns are all more or less controlled by the Deutsche Bank and the Darmstaedter & National Bank, financial groups that are particularly in favor of concentration in the rubber industry, it seems likely that complete or partial fusion may eventually result.

The companies in question, although they manufacture all kinds of rubber goods, are primarily tire producers and it seems possible that transactions, if and when completed, will embrace only this line, rather than that complete fusion will take place.

Company Reports

The latest German company reports make none too cheerful reading, although in several instances business is declared to be improving. The Harburger Gummiwaren-Fabrik Phoenix A.-G., turns out a 6 per cent dividend on 5,000 marks preferential shares, but otherwise pays no dividends, reserving the amount of 300,000 marks to strengthen its funds. Mention is made of the attempts at a fusion of important rubber companies, and it is stated that up to the present no tangible results have been reached.

The Mannheimer Gummi-Guttapercha und Asbestos-Fabrik, A.-G., Mannheim reports that although progress has been made and there was a gain in turnover of 63 per cent as compared with 1926, no profits can be reported, while the loss carried forward from 1926 could not be evened up. Bank credit had to be obtained again and the interest of the borrowed amounts, heavy taxes and high wages exhausted whatever gains were made, leaving the tiny balance of 88.15 marks.

Reclaim Industry

An interesting report is that of the well-known reclaimers, Runge Werke A.-G., Spandau. The low prices resulting after the announcement that the Stevenson scheme would be discarded and the effect on the reclaim industry naturally came in for discussion. It is shown that despite the low prices for crude rubber, American consumers are not cutting down the use of reclaim to any appreciable extent and even in May, 1928, with prices between 8⅛ pence and 9¼ pence per pound, the proportion of reclaim to crude used was 50 to 100, and the wish was expressed that a country in which economy in the use of raw materials of foreign origin was as necessary as was the case in Germany, would follow the American example. As it is, German manufacturers consumed 8,000, at most 9,000 tons of reclaim against 45,000 tons of crude rubber in 1927.

Figuring that 60 per cent of all the rubber used in two years is the utmost available for the production of reclaim, the report goes on to show that the maximum amount that could be manufactured in 1928 could not exceed 300,000 tons.

The Runge Werke has developed the mass production of reclaim, so that they are now able to put it on the market at prices below American grades, and because of the ability to produce cheaply, the company can face the future with more equanimity than would otherwise have been the case. The concern has further developed a special process by which they are able to convert materials that are hardly influenced by market conditions, into high grade reclaim besides obtaining fabric useful for a variety of purposes.

Death of Josef Reithoffer

The sudden death on June 21 is announced of Josef Reithoffer, formerly partner in the Gummi-und Kabelwerke Josef Reithoffers Söhne and later general director of the same concern when it was reorganized and incorporated. The deceased had for 41 years been active in the firm which was founded by his grandfather in 1832. It was expanded first by his father and uncles, and later by his own efforts and those of his brothers and cousins, until the modest business developed and earned for itself a name that is known not only in Austria but all over Europe and even beyond.

Russia

The Russian rubber industry will produce 35,500,000 pairs of rubber shoes in 1928, against 29,600,000 pairs the year before. The 1927 production program was realized up to 99 per cent, but there was a surplus of 1,000,000 pairs of rubber shoes due to an error in calculating production for various departments. The management of the Trust has been ordered by the Soviet Supreme Industrial Council to give undivided attention to the careful carrying out of the program.

In view of the many complaints received about the poor quality of Russian rubber shoes and tires for motor trucks, the Trust has been instructed to improve qualities, including cooperation of the factory laboratories and a change in the mixings.

In 1928 it is calculated the number of workers will show an increase of 4 per cent and the wages will average 3 per cent more, as compared with 1927. Efficiency is to be increased by 10.7 per cent and costs of production reduced by 10 per cent.

Swedish Rubber Factories

Rubber factories at Varnamo, idle for a number of years, have been purchased by a recently constituted corporation, Lindblads Gummifabrik M. Berlin & Co., and will be equipped to manufacture motorcycle and bicycle tires and other rubber goods. Automobile tire manufacture will be started at a future date. Carl Gislow, of Gislaved, who founded the rubber industry in Sweden and Mauritz Berlin, of Belocipedaktiebolaget Lindblad, Stockholm, will control the capital stock.

Czecho-Slovakia

The Gummi- and Balatawerke, Matador A.-G., in Bratislava, is a subsidiary of the Semperit concern, and for years has been producing rubber tires of all kinds on a small scale. For some time past it had been planned to expand the works but the excessively high import duties imposed on necessary raw materials prevented this. Now, however, the obstacle has for the most part been removed by the revision of the tariff and it is learned that the company is at present taking up this branch of manufacture on a large scale while following the methods of the Semperit works.

French Cameroon

By a decree of November 6, 1927, the Société des Caoutchoucs de l' Equateur was granted a concession of about 11,600 hectares in the Edea district of the French Mandatory of Cameroon. The company undertakes to plant at least 300 hectares of Hevea a year. During 1927, the exports of rubber from the French Mandatory district in Cameroon came to 713 tons, against 1,037 tons in 1926, and 830 tons in 1925. In 1913, the rubber exports from the entire Cameroon district had been 2,930 tons.

The Rubber Industry in the Far East

Malaya

Research Institute

The usual impression seems to be that while the Dutch East Indies and also Ceylon spend enormous amounts of money in scientific research work, Malaya has been very much behind in this respect. In fact, Mr. Ormsby-Gore on his recent visit to Java told his Dutch audiences as much. But Malaya has not been asleep, as a review of research work in Malaya made by Dr. Bryce, Director of the Rubber Research Institute, Kuala Lumpur, shows. In Malaya the agricultural department has published numerous important papers discussing problems of the rubber growing industry, and leading companies promoted the formation of research stations to undertake work on their behalf.

Until the present institute was established, three such stations were in existence. The first was the Research Station of the Société Financière des Caoutchoucs, which began in a small way in Kajang district in 1908 and was considerably expanded in 1910 when it was moved to Kent estate, Kuala Lumpur. It was closed down in 1922, when its annual revenue was about £4,460. The second was that of the Malaya Peninsula Agricultural Association, with a laboratory on Caledonia estate, Province Wellesley. It was formed in 1910 and was closed down in 1926. The annual revenue was about £1,500. The third was that of the Rubber Growers' Association, with a laboratory on Petaling estate, Kuala Lumpur. This station was formed in 1911, and when it was closed in 1926, its income was some £3,500 annually.

When the Rubber Research Institute was established at the desire of the rubber growing industry, the above stations were closed down and scientific work on rubber was transferred from the Agricultural Department to the institute.

The work of the institute is intended to lead to lower costs of production, to enable the industry to maintain itself in the face of increasing competition from outside and to safeguard its future prosperity. Land on which to establish an experiment station has become available, the government having placed at the disposal of the institute 2,000 acres situated in the most convenient area of forest reserve possible and, when the necessary approach road is constructed, the station should not be much further than 10 miles from the institute laboratory.

The Fight with the Dutch

Commenting on the speech made by J. S. Arter, chairman of the Planters' Association of Malaya, with regard to the much talked of fight to a finish with the Dutch, the *Malayan Tin and Rubber Journal*, states that the fight will not go as the Dutch expect. Nevertheless, there is no reason why the Dutch should have been given six months' start up to the time when restriction is finally removed in November, 1928. Although the paper would appear to be optimistic about the outcome of the battle and is only a little resentful of the fact that the Dutch have quite unnecessarily been given a start, it is plainly worried over the doings of the Dutch in Europe and their presumable plans with regard to America.

The journal is sure that nothing will come of schemes of cooperation between the British and the Dutch and warns the British rubber growers to beware of the Dutch "who are exceedingly jealous of British preeminence in the rubber growing industry." It is convinced that the Dutch, in combination with French and Belgian interests, will send delegates to America to talk rubber users there into patronizing them to the exclusion of the British. Consequently, the suggestion is made that a suitable officer be sent to the United States from Malaya to talk to the big American tire makers and bring the British grower and American consumer of rubber closer together.

Malayan Notes

The reduction of the rubber export duty was dealt with at a meeting of the Federal Council and it was decided to fix the duty at one cent per pound, effective from July 1. A reversion to the old sliding scale, though with some modifications, will probably be decided upon; the scale would be 1½ cents duty when the price was 30 cents and over, and one cent duty when the price fell below 30 cents.

On the advice of the Rubber Growers' Association, Malayan planters have dropped their request for an immediate increase in rubber release, it being considered that the objections outweigh any possible advantage.

The voluntary liquidation of Neesoon & Sons, Ltd., Singapore, is reported. The principal shareholder is understood to be Lim Nee Soon, who is one of the most prominent Chinese business men in Singapore and owns large rubber factories at Seletar besides a rubber estate.

Indragiri Rubber, Ltd., has sold forward 10 tons per month over November-December, 1928, at 30 cents (Straits currency) per pound, five tons per month over January-December, 1929, at 30 cents per pound, and five tons per month January-December, 1929, at 30¼ cents per pound.

Mentakab Rubber Co., Ltd., is preparing for hard times. The net profit during the past business year was $65,965.31, which with the balance brought forward from last year makes a total of $113,041.81. From this, an interim dividend of 10 per cent, absorbing $30,000, has been paid. Of the balance $25,000 will go to Development Reserve account and the remaining $58,041.81 will be carried forward to next account.

Ceylon

Malaya's decision not to support Ceylon in asking the Secretary of State for the Colonies to authorize gradual releases instead of total removal on November 1, has caused a certain amount of resentment here, particularly as the news reached Ceylon not directly but through the newspaper cable service. It is feared that now Ceylon could hardly hope to press for increased releases successfully for it is unlikely that Ceylon opinion alone will be of sufficient weight to win the favor of official sanction. However, it is still hoped that Ceylon may succeed in an independent action for amelioration of the present position.

The Malayan action is all the more regrettable as it might interfere with the growing friendship regarding planting matters between the two colonies. Only recently cooperation with the Rubber Research Institute of Malaya had been arranged for during the year.

Budding Rubber

The subject of budding rubber came up for discussion at the Agricultural Conference in Ceylon, held on May 8. T. A. Holland read a paper on budding rubber, and this called forth interesting remarks from some of those present.

M. C. E. A. Dias, a well known pioneer of budding, said he had been more successful with budding in the field than in the nursery and in addition, budding directly in the field saved much time.

Mr. Stockdale said that Ceylonese were slow about taking up bud grafting. There was no data as to the effect of tapping on budded rubber and what Ceylon planters wanted to know was whether the bark renewal of budded trees would be as good as of seedlings. This was particularly important for Ceylon as the oark of local trees is tender and renewal as a rule not so good as in several other rubber countries.

South African Tariff May Drop

Manufacturers of rubber machinery, compounding ingredients, packing, and belting are much interested in the report that the minister of finance of the Union of South Africa will urge Parliament to reduce tariff rates on those articles and many others industrially important.

EXPORT DUTY ON RUBBER FROM CEYLON has been reduced from 4 rupees to 2¼ rupees per one hundred pounds.

Netherlands East Indies

Planting Materials

On the basis of what is known at present in regard to Hevea planting materials the Java experiment stations, after joint consideration, advise the following: (1) Plant buddings and seedlings, of both the best obtainable; (2) of buddings, plant only those that have been temporarily selected as belonging to the best clones, and always plant a number of different clones mixed preferably 5 to 10; (3) use the best type of seed; (4) regulate the planting distances according to the planting material selected; (5) plant both buddings and seedlings in alternate rows and have different clones mixed in each row of buddings if you wish to divide the risk as much as possible and circumstances permit this. Plant buddings (several clones mixed) separately and seedlings separately, each on a different part of the plantation, if this should be preferred for any reason.

Since the supply of superior planting material, particularly as far as seed from the best classes is concerned, is at present still below the demand, it will in many cases be necessary to use what planting material is available. The experiment stations gladly give detailed advice for each special case.

Weight in Hevea Seeds

At the meeting of the Soekaboemi and Rubber Planters' Association the question was put as to whether there was any connection between the weight and quality of otherwise sound Hevea seed. Dr. Bobilioff answering said that there is some connection between weight and quality of seeds. It seems that heavy seeds germinate better than light ones, and plants from heavy and large seeds grow more vigorously than those from small light seeds. It has also been found, he said, that seeds weighing over four grains each germinate better than those weighing less. These results were obtained by Sprecher who worked on the subject 15 years ago at the Besoeki Experiment Station.

However, it seems that this data has not proved of much use practically because comparisons were made with seed from different trees. It is known that Heveas produce fairly uniform seed, some trees producing only small seeds and others only large ones. Judging seed by weight offers many difficulties, though of course, it is understood that very light seed should be discarded as these usually do not germinate.

A planter who was present stated that experiments in this regard were carried out on his estate and the conclusion was that the difference between heavy and lighter seed is not as great as it seems. Although heavy seeds at first do germinate and grow more rapidly, this advantage soon disappears.

Rubber in High Altitudes

It is generally assumed that the productivity of rubber in high altitudes (about 1,800 to 2,200 feet), is much less than of rubber planted at lower levels above the sea. This opinion seems to gain support from the fact that the girth of rubber trees planted at high altitudes increases comparatively slowly, at least much slower than where the trees are planted lower down. But the bast formation in trees of the same age and same girth, is very much better than in those from lower levels. In fact in the Malang district, it has now been decided that the girth at which trees may be tapped should be dropped to 50 to 45 cm. instead of being fixed at the usual 100 cm.

Figures have been published for two plantations, one high and one low, which go to prove that while at first the lower garden gave higher yields after a lapse of years the higher estate improved to such an extent that it recorded crops over 28 per cent higher than on the low estate. Thus it seems that where the soil is good, a proper output, in this case as high as 400 kilos per bouw (bouw=1.74 acres) may be expected and that it is wise to give rubber in high altitudes a chance before cutting it out if it is found that yields during the first few tapping years are not up to standard. This is especially recommended where the soil is such as to permit proper development of the roots and where the land is rich in plant-food.

The Rubber Union

Fuller details regarding the closing down of the Rubber Union's remilling factory at Banjermasin, Borneo, have now come to hand.

The Rubber Union, it will be remembered, began work on a big scale. Millions were invested in setting up big factories in Banjermasin, Borneo, and Djambi, Sumatra, besides the smaller factories at Pontianak (Borneo) and Palembang (Sumatra). It was hoped to break the Chinese monopoly in the remilling business at Singapore and at the same time to be of assistance to the Koninklijke Poketvaart Mij., the important Dutch shipping company, by giving it the entire business of transporting the finished product. The government, as is known, came to the company's assistance by instituting a license system requiring special permission for the erection of remilling factories, and the Rubber Union started its operations.

In September, 1926, the building of the Banjermasin factory was begun and by August it was possible to begin work with 6 to 12 mills, out of a total of 24 mills. But the good plans struck a snag, and a serious one at that. One which in all calculations had probably caused the least anxiety, and that was the question of buying the rubber to be reworked.

Native rubber comes to market in varying stages of decomposition and adulteration, and it is no easy task to make anywhere near a correct estimate of the amount of rubber obtainable from a given lot. The Chinese, however, seem to have a knack for this kind of thing. The Rubber Union made honest bids, but could get no rubber; it was generally 5 guilders and even 15 guilders below others, particularly the agents of the well known Tan Kah Kee concern of Singapore. The Chinese bid higher not only because they could better figure the amount of rubber they would get for their money, but quite as often because they expected to be able to make a big coup whenever there was an unforseen rise in the price of rubber.

The result of all this was the closing of the Banjermasin works. Other non-European factories continue to work in these territories and seem to be getting along well. These generally work up rolled bark.

Forward Sales

The Rubber Cultuur Mij. Amsterdam reports the following forward sales: Crop 1928. (a) 6,145,000 pounds, average 1 shilling 5.2 pence per pound f. o. b. Dutch East Indies, January-April, deliveries to General Rubber Co.; (b) 4,078,000 pounds, at London prices for standard sheet, with a minimum of 1 shilling 2 pence per pound, for May-December delivery to General Rubber Co.; (c) 772,000 pounds, at London prices for standard sheets with a minimum of 1 shilling per pound, for May-December delivery to General Rubber Co.; (d) 805,000 pounds, May-December delivery at prevailing London prices with minimum 1 shilling and maximum 1 shilling 3 pence, and if London prices advance beyond 1 shilling 5 pence, half the difference between the higher price and 1 shilling 5 pence will be paid the company.

Crop 1929: (a) 3,619,000 pounds, at an average of 1 shilling 4.8 pence per pound f. o. b., Dutch East Indies port; (b) 6,228,000 pounds to General Rubber Co. on terms as under (b) of 1928 crop; (c) 1,102,000 pounds to General Rubber Co. on terms as under (c) of 1928 crop.

Crop 1930: 2,919,600 pounds at average price of 1 shilling 4.7 pence per pound f. o. b., Dutch East Indies port.

Hevea in Belgian Congo

According to M. Miny the Hevea trees planted in Belgian Congo are partly derived from East Asiatic plantations and partly from seed introduced from Brazil by Godefroy-Leboeuf. A careful investigation now shows that the trees of Asiatic origin have, under equal conditions, consistently yielded considerably larger crops than the trees raised from seed directly imported from Brazil. Despite the comparatively low rainfall and a dry season of five months, annual outputs of 300 to 450 kilos per hectare can be counted on.

French West Africa

In 1927 the total shipments of rubber from French West Africa were 1,276,021 kilos, as compared with 1,878,262 kilos the year before. Senegal shipped 42,777 kilos instead of 110,665 kilos; Guinea, 934,492 instead of 1,258,076 kilos and Ivory Coast 295,342 against 486,210 kilos. Dahomey was listed with 14 kilos in 1926, but with nil for last year.

Rubber Patents, Trade Marks and Designs

Machinery Patents

United States

1,673,353. INNER TUBE VULCANIZER. This apparatus is a steam jacketed mold with steam jacketed cover, wherein live steam is utilized as a vulcanizing medium within the tube or other hollow article so that all portions of the article being subjected to vulcanization will be uniformly treated and cured. Further, the article being vulcanized is maintained in constant motion during its cure so that the water of condensation may not collect in any one part of the article. Walter L. Fairchild, New York, N. Y.

1,673,530. STRIP COVERING MACHINE. This invention provides means for assembling a core of strip material and a band of fabric, wrapping the fabric about and stitching it to the core. The strip material to be covered is drawn through a guide tube from a supply reel and tube. When the core material emerges from the guide tube the band of fabric is spiraled around it as it passes 2 grooved wheels and on to a stitching device or head to tightly stitch the band down. As the covered strip passes from the machine it may be wound upon a reel. E. D. Putt, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,673,536. AIRBAG TESTING RACK. This testing rack accommodates a number of pneumatic cores or airbags while they are being tested for air leaks and other defects. After testing the bags are automatically removed from the testing tank. Mechanism is provided within the tank which permits the airbags to be mechanically fed into one end of the tank where after submergence for test they float forward on a conveyer device which raises them from the tank and drops them outside. E. G. Templeton, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,673,987. MOLD CUTTING MACHINE. This is a machine tool device for use in cutting tread designs in tire molds. The main object of the invention is to provide a machine in which a depressed profile jig may be used which is considerably larger than the design to be cut in the mold. This obviates variations or inaccuracies in the finished pattern. J. H. Nesbitt, assignor to The Akron Rubber Mold & Machine Co., both of Akron, O.

1,674,387. VULCANIZING APPARATUS. This apparatus is adapted for squirting into the cavity or cavities of a mold treated or untreated crude or compounded rubber of any predetermined shape and construction such as battery boxes, etc. The mold for the article being assembled and securely locked together the nozzle of a squirting mechanism is connected and the rubber compound injected to fill it ready for curing. Stanley T. Campbell, Cleveland, O.

1,674,574. COOLING APPARATUS FOR RUBBER TUBING. This device is used in connection with a tubing machine. It comprises an external cylinder with spiral shelf, which is caused to descend past the outlet or die of a tubing machine by being turned downwardly on a spiral track pedestal. The latter is mounted upon a truck for removal of the rubber tubing for cooling in curved form. C. H. Semple, Youngstown, O., assignor by direct and mesne assignments to Semple-Lee Processes, Inc., Akron, O.

1,674,767. WIRE COVERING DEVICE. This apparatus is designed for covering endless wire tire bead rings with strips of adhesive material in particular those cabled or bundled hoops used in the manufacture of automobile tire casings. C. H. Desautels, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,675,875. MACHINE FOR CUTTING OFF AND SKIVING STOCK. This invention is particularly adapted to cut stock into strips for making tire flaps which lie between the inner tube and outer tire for vehicle wheels. It is further adapted for cutting off and skiving stocks for other purposes. The cutting is accomplished by the movement of skiving disks across the stock. T. A. Beaney, Poughkeepsie, assignor to Beaney Rubber Co., New York, both in N. Y.

1,675,984. APPARATUS FOR REMOVING FABRIC STRIPS FROM CUTTING MACHINES. This invention relates to a device for removing cut fabric strips from the machine which cuts them from a roll. It is particularly adapted for use in tire factories and in conjunction with a vertical machine for cutting strips on the bias. H. F. Maranville, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,672,955. AIRBAG. H. C. Ries and Lee Whyms, Fond du Lac, Wis.

1,673,085. VACUUM MIXING MACHINE. E. G. Loomis, Newark, N. J.

1,673,219. METHOD OF SALVAGING TIRE CARCASSES. F. W. Andrews, Cleveland, O., assignor to Revalo Products Corp., a corporation of New York.

1,673,352. VULCANIZING APPARATUS FOR PNEUMATIC TUBES AND THE LIKE. W. L. Fairchild, New York, N. Y.

1,673,444. ROLL HOLDER FOR WRAPPING MACHINES. Jasper Derry, Medford, assignor to Andrew Terkelsen, Boston, both in Mass.

1,673,505. HEEL MOLD. J. I. Haase, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,673,506. TUBE DEFLATING STAND. S. R. Harrington, New Toronto, Ont., Canada, assignor to The Goodyear Tire & Rubber Co., Akron, O.

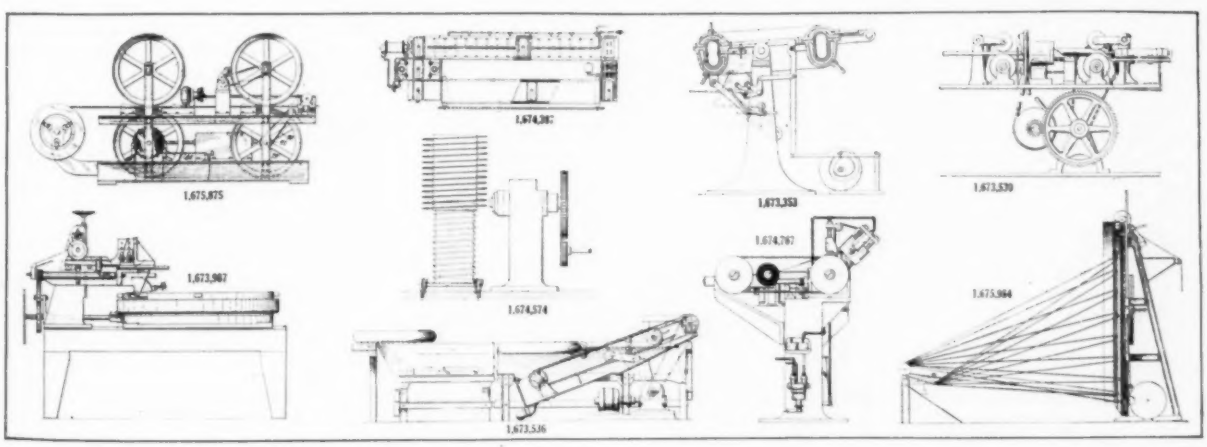
1,673,521. CONTROL DEVICE. E. F. Maas, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,673,525. TIRE MOLD. M. C. Nelson, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,673,878. EXPANSION BAR. Frederick Leopold, Jr., Harmonville, and R. J. Limbert, Conshohocken, assignors to Lee Rubber & Tire Corp., Conshohocken, Pa.

1,674,171. APPARATUS FOR PRODUCING TUBULAR, FIBROUS STRUCTURES. J. R. Gammeter, F. J. Shook and G. F. Wilson, Akron, O., assignors to The B. F. Goodrich Co., New York, N. Y.

1,674,278. WRAPPING OR UNWRAPPING MACHINE. Jasper Derry, Medford, Mass.



Rubber Patents, Trade Marks and Designs

1,674,722. Bead Making Apparatus. D. E. Hennessy, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,674,772. Calendering. A. A. Frank, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,675,130. Tire Building Apparatus. F. B. Pfeiffer, Akron, O.

1,675,521. Tire Spreader. G. E. Weaver, assignor to Weaver Mfg. Co., both of Springfield, Ill.

1,676,139. Tire Inflating Apparatus. O. F. Flumerfelt, Hamburg, N. Y.

Dominion of Canada

281,000 Heel Trimmer. The United Shoe Machinery Co. of Canada, Ltd., Montreal, Que., assignee of S. J. Finn, Beverly, Mass., U. S. A.

281,298 Processing Machine. The Farrel-Birmingham Co., Inc., assignee of Farrel Foundry & Machine Co., assignee of R. C. Lewis, all of Ansonia, Conn., U. S. A.

281,485 Bias Cutter. The Spadone Machine Co., Inc., assignee of Julius Wegner, both of New York, N. Y., U. S. A.

United Kingdom

289,793† Apparatus for Scraping and Surfacing. S. F. Anderson, Rockford, Ill., U. S. A.

† Not yet accepted.

Germany

462,495 Vulcanizing Press. Fried. Krupp, Grusonwerk A. G., Magdeburg-Buckau.

Designs

Germany

1,034,271 Vulcanizer. Wilhelm Oscar Heublein, Rüsterstrasse 16, Frankfurt-on-Main.

1,035,820 Dispersion Kneading Machine. Eugen Stich, Werderstrasse 28, Mannheim.

Process

United States

1,673,573 Latex for Fabric Seams. C. C. Loomis, Yonkers, and G. E. Perry, Brooklyn, both in N. Y., assignors by mesne assignments to United States Rubber Co., a corporation of N. J.

1,673,974 Forming Air Pockets in Rubber. C. G. Fawkes, Denver, Colo.

1,674,156 Insulated Wires. H. B. Burley, Brookline, Mass., assignor to Boston Insulated Wire & Cable Co., a corp. of Mass.

1,674,503 Soles. R. E. Drake, Brockton, assignor to Avon Sole Co., Avon, both in Mass.

1,674,526 Inner Tube Joints. C. H. Semple, Youngstown, assignor by direct and mesne assignments to Semple-Lee Processes, Inc., Akron, both in O.

1,674,753 Making Tire Molds. C. A. Witter, Philadelphia, Pa.

1,674,781 Diaphragms. C. S. Kelley, East McKeesport, assignor to The Westinghouse Air Brake Co., Wilmerding, both in Pa.

1,676,190 Abrasive Wheel. Pehr Johansson and D. E. Webster, assignors to Norton Co., all of Worcester, Mass.

United Kingdom

288,780 Driving Belt. Dunlop Rubber Co., Ltd., 32, Osnaburgh St., London, and S. Sadler, Fort Dunlop, Erdington, Birmingham.

289,607 Molding Draining Boards. J. P. Harkin, 72, Dundas St., Thornbury, Victory, Australia.

289,985 Wheel Tire. Dunlop Rubber Co., Ltd., 32, Osnaburgh St., London, and A. W. T. Hyde, Fort Dunlop, Erdington, Birmingham.

Germany

462,221 Coloring Rubber. A. G. Metzeler & Co., Munich.

462,537 Rubberizing Fabrics. Dr. Werner Esch, Osterbekstrasse 43, Hamburg.

Chemical Patents

New York

1,673,549 Anti-Ager. An accelerating aldehyde-aliphatic amine condensation product applied in excess of that required to secure proper vulcanization. S. M. Cadwell, Leonia, N. J., assignor to The Naugatuck Chemical Co., Naugatuck, Conn.

1,673,550. Accelerator. An organic compound comprising the group SS in which at least one of the sulphur atoms has at least one atom of oxygen attached to it. S. M. Cadwell, Leonia, N. J., assignor to The Naugatuck Chemical Co., Naugatuck, Conn.

1,673,649. Making Rubber Articles. An aqueous dispersion of rubber is disposed in a relatively thick layer in the presence of a hydrophilic agent and exposed to drying conditions. M. C. Teague, Jackson Heights, N. Y., assignor to American Rubber Co., Boston, Mass.

1,673,672. Treatment of Latex. The addition of a material which presents coagulation but permits bacterial action, allowing the latex to stand until its protein constituents are substantially decomposed, then drying the latex. W. A. Gibbons, Great Neck, and John McGavack, Jackson Heights, N. Y., assignors to United States Rubber Plantations, Inc., New York, N. Y.

1,673,801. Accelerator. The reaction product resulting from admixing, in the cold, magnesia and an aromatic organic amine; gradually adding carbon disulphide to this mixture while keeping it cold and without the evolution of substantial quantities of hydrogen sulphide. Thereafter the mixture is heated below 140 degrees C. until gas evolution ceases. Harry O. Chute, New York, N. Y.

1,674,053. Sponge Rubber. Into unvulcanized sponge rubber stock are mixed a quantity of vulcanized sponge rubber particles and an additional blowing agent. T. W. Miller, assignor to The Faultless Rubber Co., both of Ashland, O.

1,674,122. Accelerator. D. R. Powers, Penns Grove, N. J., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

1,675,124. Breaking Down Rubber. This method of breaking down heated rubber stock comprises causing carbon dioxide to freeze or solidify itself, and then utilizing the solidified carbon dioxide to control the temperatures of the rubber during processing. H. R. Minor, Ossining, N. Y., assignor to General Carbonic Co., New York, N. Y.

1,675,959. Sheet Material. Fibrous sheet material made by mixing a suspension of beaten fibers and a dispersion comprising rubber, water, and a protective agent having a negative charge in alkaline medium; reversing the charge on the protective agent by treatment with acid. This causes the agent to carry the dispersed rubber onto the fiber for subsequent formation of sheets. R. P. Rose, Jackson Heights, N. Y., assignor to General Rubber Co., New York, N. Y.

Dominion of Canada

281,123. Finishing Rubber Articles. Vulcanizable articles are coated with a varnish comprising a drying oil, and both vulcanizing and subjecting the article to a superficial treatment with a halogen. The Dominion Rubber Co., Ltd., Montreal, assignee of S. D. Shinkle, New Haven, Conn., U. S. A.

281,278. Porous Material. Manufacturing porous bodies by imbuing porous particles with gasoline, interchanging the porous particles with rubber, and causing vaporization of the gasoline. Heinrich Ziegener, Hagen, Prussia, Germany.

281,451. Catgut Substitute. Cords or strings impregnated with a solution containing a material having the characteristics of gutta percha. The Dunlop Rubber Co., Ltd., London, assignee of A. E. Penfield, R. Truesdale and R. C. Smith, Birmingham, all in England.

United Kingdom

288,541. Reducing Extensibility. The extensibility of thin-walled rubber articles is reduced by applying to them a flexible lacquer-like, water insoluble coating, preferably of cellulose derivatives which reduces the stretching capacity by at least one half. I. Dorogi, L. Dorogi and Dorogi Es Tarsa Gummigyar R-T. Budapest, Hungary.

289,022. Preserving Latex. Latex is prevented from premature coagulation by the addition of water-soluble neutral or alkaline salts of ester acids, especially those of mineral acids. I. G. Farbenindustrie, A. G., Frankfort-on-Main, Germany.

289,122. Waterproofing Compositions. An ammonium base or an aliphatic amine in aqueous solution is added to a metallic soap, the hydroxide of which is rendered soluble by ammonia. The resultant product is capable of dispersing rubber latex, etc. The presence of rubber latex produces a cream capable of waterproofing fabrics dipped into it. C. J. J. Fox, Pontsarn, Guildford Rd., Woking, Surrey.

Rubber Patents, Trade Marks and Designs

289,270. SEALING COMPOSITION. A composition for sealing the joints in can ends comprising latex, an alginic material and a body material such as calcined aluminum oxide. J. L. Mellerish, 28, Southampton Bldg., London (American Can Co., 120 Broadway, N. Y.)

289,583. COAGULATING LATEX. Latex is sprayed into a heated gaseous medium. Anti-coagulating or anti-agglutinating agents, such as soap, being simultaneously sprayed without being previously mixed with the latex by introducing them into the sprayer at the moment of spraying, or by spraying them simultaneously from a separate sprayer. Softeners, fillers, vulcanizing agents, etc., may be sprayed intermittently or simultaneously through a separate sprayer. J. E. Nyrop, 11 Lyngbyvej, Copenhagen.

289,702. MOLDED SEAT. A composition of cork, shavings, fiber, sawdust, etc., with rubber, reclaim, glue or colors and vulcanizing agents. J. Harris, Fernbank, Kings Rd., Brighton-le-Sands, near Sidney, Australia.

289,965. TREATING LATEX. In the electrodeposition of rubber from latex, etc., an electrolyte which will not readily cause coagulation, but will act as a self excitant between electrodes, is added to the latex. Zinc oxide, sulphur or the like may be added to the latex, which must be only feebly alkaline. W. A. Williams, 1 Lennox St., Edinburgh.

General

United States

June 12, 1928*

1,672,905 AIR VALVE. J. T. Riddell, Evanston, Ill.

1,672,908 WHEEL. T. H. Rushton, Worksop, England.

1,673,141 and 1,673,142 MOLDING. G. B. Dryden and Rees Beynon, Chicago, Ill., assignors to Dryden Rubber Co., a corporation of Ill.

1,673,190 NIPPLE. H. H. Ganson, assignor to Hygeia Nursing Bottle Co., Inc., both of Buffalo, N. Y.

1,673,293 TIRE VALVE CAP. W. B. McBride, Akron, O.

1,673,364 ROLLER. P. N. Joslin, DeKalb, Ill.

1,673,447 PLUMBER'S PLUNGER. E. S. Fiedler, La Cross, Wis.

1,673,452 HEEL. Joseph Hegedus. College Point, N. Y.

1,673,479 INFLATABLE TOY. L. H. Allen, West Springfield, Mass.

1,673,482 BLOWOUT PATCH. Claus Arsenault, assignor of one-half to A. C. Potter, both of Webster, Mass.

1,673,551 ELASTIC WEBBING. G. E. Clauss, assignor to the Ansonia O. & C. Co., both of Ansonia, Conn.

1,673,630 PAVING. N. G. Madge, Providence, R. I., assignor to The Mechanical Rubber Co., Cleveland, O.

1,673,650 HORSESHOE. R. R. Tweed, Audubon, N. J.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

June 19, 1928*

1,673,883 TIRE ALARM. Charles Potestio, Columbia, Utah.

1,673,890 CONDENSER TUBE CLEANER. E. H. Smith, Cleveland, O.

1,674,549 HEEL. Clayton Hobert, Philadelphia, Pa.

June 26, 1928*

1,674,765 PNEUMATIC CORE. E. E. Dearth, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,674,839 METALLIC PACKING. H. P. Rhodes, Houston, Tex.

1,675,005 TIRE VALVE AND GAGE. R. G. Tagle, New York, N. Y., and E. H. Currie, East Orange, N. J.

1,675,101 HEEL. Clayton Hobert, Philadelphia, Pa.

1,675,206 RUBBER FOOTWEAR. G. W. Bell, Hamilton, assignor to Getly & Scott, Ltd., Galt, both in Ont., Canada.

July 3, 1928*

1,675,348 FOOT AND ANKLE PROTECTOR. W. J. Harvey, New York, N. Y.

1,675,372 SWIMMING DEVICE. Hartwig Mohr, Brooklyn, N. Y.

1,675,395 HOT WATER BOTTLE. C. P. Whisler, Kenmore, assignor to The Rubber Products Co., Barberton, both in O.

1,675,410 TIRE PRESSURE DEVICE. J. H. Gartner, San Francisco, Calif., assignor of one-fifth to P. S. Higgnis, one-fifth to J. D. Skelly, and one-fifth to William Shackleton.

1,675,752 VALVE CAP. F. D. Farr, Perry, assignor to A. Schrader's Son, Inc., Brooklyn, both in N. Y.

1,675,758 NECKTIE. Hugo Leoni, New York, N. Y.

1,675,816 WINDSHIELD WIPER. Frederic Mokma, Sand Creek, Mich.

1,675,990 TIRE VALVE. M. J. Payne, assignor to The Payne Valve Corp., both in Staunton, Va.

1,676,162 ARCH SUPPORT. Rudolf Schiller, Brooklyn, N. Y.

Reissues

16,999 TUBE AND METHOD OF MANUFACTURE. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y. Filed Apr. 11, 1928. Serial No. 269,176. Original No. 1,663,754, dated Mar. 27, 1928, Serial No. 47,690, filed Aug. 3, 1925.

17,020 PAVING BLOCK. L. J. D. Healy, Milwaukee, assignor to Wright Rubber Products Co., Racine, both in Wis. Filed Feb. 2, 1925. Serial No. 6,469. Original No. 1,473,767, dated Nov. 13, 1923, Serial No. 490,038, filed Aug. 5, 1921.

Dominion of Canada

June 12, 1928

280,832 MILKING MACHINE. D. W. Myers, Winnetka, and R. L. Sherman, Oak Park, both in Ill., U. S. A.

280,868 TRANSMISSION BELT. R. J. Gits, Chicago, Ill., U. S. A.

281,007 FLUSHING VALVE. James Teahen, Detroit, Mich., and William Taylor, Robinson, Ill., U. S. A., assignee of one-half of the interest.

June 19, 1928

281,058 HOT WATER VEST. John Jirasek, Detroit, Mich., U. S. A.

281,179 FLYING SUIT. The Woods Mfg. Co., Ltd., Hull, Quebec, assignee of D. H. Dunne, Ottawa, Ont.

June 26, 1928

281,206 GLOVE CUFF AND WRIST BAND. H. T. Arnold, Georgetown, Ont.

281,245 CHASSIS SUSPENSION. E. B. Killen, London, E. C. 4, Eng.

281,257 WATER BAG. M. B. Reach, Springfield, Mass., U. S. A.

July 3, 1928

281,384 TIRE TUBE. H. H. Hastings, Toronto, Ont.

281,463 JOURNAL BOX. W. H. Miner, Inc., Chicago, assignee of G. Q. Lewis, Wheaton, both in Ill., U. S. A.

281,465 BUFFER STEM PLATE. W. H. Miner, Inc., assignee of G. Q. Lewis, both of Chicago, Ill., U. S. A.

281,466 RAILWAY TRUCK SUPPORT. W. H. Miner, Inc., Chicago, assignee of G. Q. Lewis, Wheaton, both in Ill., U. S. A.

United Kingdom

June 7, 1928

288,671 INFLATING TIRES. S. Riley, 2, Franklin St., Blackburn.

288,687 PAVING BLOCK. J. S. Cowper, 24, Queensberry Pl., London.

288,718 HOSE COUPLINGS. J. Stone & Co., Ltd., Deptford, London, and H. Neville, Rydal, Glebe Rd., Cheam, Surrey.

288,748 TIRE VALVE. J. W. Cooley, Gedney Drove End, Wisbech, Cambridgeshire.

288,819 TUMBLING BARREL. H. C. Beckett, Inglewood, Dollis Hill Lane, Cricklewood, Middlesex.

June 13, 1928

288,895 TOY BALLOON. L. C. White, 151, Benedict Ave., Norwalk, O., U. S. A.

288,896 PAVING BLOCK. J. S. Cowper, 24, Queensbury Pl., London.

288,933 PNEUMATIC TIRE. F. Seel, 45, Walkmuhlstrasse, Wiesbaden, Germany.

288,993† DRIVING BELT. R. J. Gits, 1940 S. Kilbourn Ave., Chicago, Ill., U.S.A.

289,014† PLASTER AND ADHESIVE BANDAGE. D. Sarason, 17, Heinrich Hertzstrasse, Hamburg, Germany.

289,038† TIRE TREAD. Goodyear Tire & Rubber Co., assignee of C. J. Burkley, both of Akron, O., U. S. A.

289,061† and 289,087† PAVING BLOCK. Compagnie Francaise du Caoutchouc, 31, Avenue du Roule, Neuilly, Seine, France.

289,151 HEAD BANDAGE. D. O'Donovan, The Manor, North Parade, Llandudno.

289,200 CYCLE SADDLES. H. and J. Jelley, 22, Albert St., Birmingham.

289,216 ELECTRIC COUPLINGS. W. Brown, 89, Douglas St., Glasgow.

June 20, 1928

289,329 SIFTING APPARATUS. T. Robinson & Son, Ltd., and W. N. Robinson, Railway Works, Rochdale.

289,333 HAT SWEAT BAND. D. O'Donovan, Almswood, High St., Evesham, Worcestershire.

† Not yet accepted.

Rubber Patents, Trade Marks and Designs

289,449† ELASTIC STOCKING. M. R. Hartmann, 73A, Hohestrasse, Zuelenroda, Thuringia, Germany.

289,518 PIPE COUPLINGS. G. Spencer, Moulton & Co., Ltd., and R. T. Glascodine, 2, Central Bldgs., Westminster.

289,522 PARTITIONED BOTTLES. H. Druckrey, 28, Alicestrasse, Giessen, and H. Lamprecht Ges., Cassel, both in Germany.

289,594 BALL AND FLOAT VALVE. W. E. Farrer, The Corner, Brueton Ave., Solihull, near Birmingham.

289,641 BUOY AND FLOAT. J. Young, 10, Edgcumbe St., Stonehouse, and B. H. Whiteford, 17, Courtenay St., both in Plymouth.

289,659 TANK COVERING. J. Poberejsky, 2, Rue du Parc, Bois Colombes, Seine, France.

June 27, 1928

289,761† PNEUMATIC TIRE GAGE. A. Schrader's Son, Inc., Brooklyn, N. Y., assignee of J. Wahl, Rosedale, and O. Melzer, Hollis, both in N. Y., all in U. S. A.

289,828 DRIVING AND CONVEYER BANDS. Soc. Anon. Etablissements Flinois, Colmant, et Cuvelier, Colmant et Cuvelier Successeurs, Boulevard du Hainaut, Tournai, Belgium.

289,917 VACUUM COVER FOR JAR. K. S. Jassawalla, 4, Magdalla Rd., Highgate, London.

289,918 PAVING. E. O. Cowper, 24, Queensberry Pl., London.

289,956 INFLATABLE BALL. T. Dudson, 42, High St., Abertridwr, near Cardiff.

290,026 SAFETY RAZOR SHARPENER. J. Vaughan, Milwaukee, Wis., U. S. A.

†Not yet accepted.

Germany

461,966 CANDY MOLD. Kurt Vogt, Erste Fleiszstrasse 23, Konigsberg, Prussia.

462,026 BLOCK BELT. Rudolf Roderwald, Tempelhofer Berg 5a, Berlin S. W. 29.

462,126 FAN BELT. Continental Caoutchouc-und-Gutta-Percha Compagnie, Hannover.

462,242 DEVICE FOR HOLDING SHOE LACES. Paul Sindt, Amsinckstrasse 41, Hamburg.

462,347 BATHING CAP. Marjorie Hart, née Payne, Vancouver, Washington, United States. Represented by B. Kugelmann, Berlin S. W. 11.

462,457 RUBBER LINED CASK WITH RUBBER OR SIMILAR PROTECTIVE MATERIAL. Harzer Achsenwerke, g. m. b. H., Barnum, Harz.

Designs

Germany

1,033,615 BUFFERS. Alinin Düsterloh, Sprockhövel i. W.

1,033,730 REAR AXLE ARM. Jakob Arnold, Wetzlar.

1,033,922 HIGH TEMPERATURE CONDUCTION. Kabelwerk Vacha A. G., Vacha, Rhön.

1,033,949 BRUSH. Otto Schlappig, Achenbachstrasse 133, Düsseldorf.

1,034,606 BATHING SUIT. August Jany, Werden a. d. Ruhr.

1,034,728 TOILET SPONGE. Edmund Schmidt, Christstrasse 22, Berlin-Charlottenburg 5.

1,034,799 FINGER COT. Gebrüder Weber, Holstenwall 8, Hamburg 36.

1,035,185 PACKING STRIPS. Continental Caoutchouc-und-Gutta-Percha Compagnie, Hannover.

1,035,214 DOOR BUFFER. Walter Jarmer, Schötteringsweg 7, Hamburg.

1,035,508 PIPETTE. Alfred Metz, Kaiserstrasse 75, Frankfurt-on-Main.

1,035,620 CHLOROFORM MASK. Friedrich & Co., G. m. b. H., Kassel.

1,035,662 TOILET AND SHAVING TRAY. Alfred Langer-Reuth, Frobenstrasse 9, Berlin W 35.

1,035,779 ANTI-SKID PROTECTOR. Willy Müller, Annaberg i. S.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

June 12, 1928

Act of February 20, 1905

243,000 BIPLEX—erasers. A. W. Faber, Inc., Newark, N. J.

243,001 A. W. FABER—rubber bands, erasers, etc. A. W. Faber, Inc., Newark, N. J.

243,015 COMPETITOR—tires. Gash-Stull Co., Chester, Pa.

243,053 MISER-TITE—portable tire repair kits. M. & S. Tire & Tube Patch Co., Washington, D. C.

243,209 THE ONLIE GOLF SHOE—boots and shoes of leather, rubber, fabric, etc. A. W. Nelson, doing business as The Onlie Shoe Co., Quincy, Mass.

Act of March 19, 1920

243,270 Shield containing the word: "McAFEES"—golf shoe with rubber studded sole. Saks & Co., New York, N. Y.

June 19, 1928

Act of February 20, 1905

243,279 RUBBEREX—hard rubber caster wheels. Faultless Caster Co., Evansville, Ind.

243,368 DURALITE—golf balls. The Crawford, McGregor & Canby Co., Dayton, O.

243,385 HANAN JUNIOR—boots, shoes and slippers. H. W. Hanan, doing business as Hanan & Son, Brooklyn, N. Y.

243,441 50-50 BURKE—golf balls, tees, etc. The Burke Golf Co., Newark, O.

243,443 AYRFLOTE—inflatable boats. Clarke Mfg. Co., Inc., New Haven, Conn.

June 26, 1928

Act of February 20, 1905

243,551 PLASTIKON—adhesives. The B. F. Goodrich Co., New York, N. Y.

243,696 RUB-ER-JEL—tire repair kits and self vulcanizing blowout patches. Rub-er-jel Products, Inc., Needham, Mass.

Act of March 19, 1920

243,786 PERFECTION SPRING ON COVER—tire covers. The Buttonless Tire Cover Co., Canton, O.

July 3, 1928

Act of February 20, 1905

243,893 SPARK—golf balls. The Vulcan Last Co., doing business as Vulcan Golf Co., Portsmouth, O.

Act of March 19, 1920

244,039 CLIFTON—rubberized textile fabrics. Clifton Mfg. Co., Jamaica Plain, Boston, Mass.

Dominion of Canada

June 12, 1928

43,956 Two concentric equi-angular spherical triangles arranged one within the other; between the respective parallel sides are placed the words: "RUBBER SERVICE LABORATORIES"; in the central portion are the letter and numerals: "Z-88"—vulcanization accelerator. The Rubber Service Laboratories Co., Akron, O., U. S. A.

43,957 Two concentric equi-angular spherical triangles arranged one within the other; between the respective parallel sides are placed the words: "RUBBER SERVICE LABORATORIES"; in the center portion are the letter and numerals: "A-19"—compound used in curing rubber articles. The Rubber Service Laboratories Co., Akron, O., U. S. A.

43,958 Two concentric equi-angular spherical triangles arranged one within the other; between the respective parallel sides are placed the words: "RUBBER SERVICE LABORATORIES"; in the central portion the word: "TACKOL" appears—compounding ingredient and rubber softener. The Rubber Service Laboratories Co., Akron, O., U. S. A.

43,959 Two concentric equi-angular spherical triangles arranged one within the other; between the respective parallel sides are placed the words: "RUBBER SERVICE LABORATORIES"; in the central portion are the letter and numerals: "A-16"—vulcanization accelerator. The Rubber Service Laboratories Co., Akron, O., U. S. A.

43,960 Two concentric equi-angular spherical triangles arranged one within the other; between the respective parallel sides are placed the words: "RUBBER SERVICE LABORATORIES"; in the central portion are the letter and numerals: "A-11"—vulcanization accelerator. The Rubber Service Laboratories Co., Akron, O., U. S. A.

43,968 "SHUETTE"—footwear. The Miner Rubber Co., Ltd., Granby, Que.

June 19, 1928

43,984 "SAFETY BRAND"—rubber goods. The Woodstock Rubber Co., Ltd., Woodstock, Ont.

Rubber Patents, Trade Marks and Designs

June 26, 1928

44,053 "PARASKIN"—clothing. The Express Rubber Co., Ltd., 76-78 Mortimer St., London, W., Eng.

44,061 "EXPRESS"—clothing. The Express Rubber Co., Ltd., 76-78 Mortimer St., London, W., Eng.

44,079 "OSO-SOFT"—pneumatic cushion. Eno Rubber Corp., Los Angeles, Calif., U. S. A.

44,097 "RAINSHINE SATIN"—rubberized fabric and merchandise into which the said fabric is manufactured. Bobbie Coats, Ltd., Toronto, Ont.

United Kingdom

June 6, 1928

476,801 MORSO—liquid paint preparations. Morso, Ltd., 350, George St., Sydney, New South Wales, Australia.

B485,898 WATERLOO—soles and heels. Sussex Rubber Co., Ltd., 32, Houndsditch, London, E. 1.

487,800 DELAHOSE—clothing. The Dela Rubber Co., Ltd., 2, Cambridge St., Manchester.

488,864 Fancy square containing the words: "THE CLIMATITE"—waterproof and rainproof clothing. John Mares, Ltd., 9 New St., Basingstoke, Hampshire.

490,083 JIT—baby soothers, teats, syringes, etc. L. A. Jackson, trading as The London Rubber Co., 183 Aldersgate St., London, E. C. 1.

490,724 VELVAMAC—rainproof and waterproof garments. Baron Stirling Henry Nahum, trading as Andrew Baron, 52, Princess St., Manchester.

June 13, 1928

490,342 "ROADSMILE PUNCTURE POWDER"—tire puncture composition. H. C. Ferguson, trading as The Punctureproof Co., 200, Duke St., Glasgow.

June 20, 1928

138,692 BOISEME—cotton piece goods coated with rubber. C. A. Simpson & Co., Ltd., 9, Chatham St., Manchester.

489,019 Representation of two children applying patches—adhesives for tailors' use. Henning Orla Bruhn, 93, Store Kongensgade, Copenhagen, Denmark.

489,383 GREYHOUND—machine belting. Spartan Mfg. Co., Ltd., Broad Street House, New Broad St., London, E. C. 2.

489,468 REGESAN—rubber and gutta percha goods. Boots Pure Drug Co., Ltd., 37, Station St., Nottingham.

June 27, 1928

482,438 Circle containing the representation of a bull beneath which is a pennant bearing the word: "TAURUS"—wire. Isolierdraht Aktiengesellschaft, 54, Waengi, Thurgovie, Switzerland.

Designs

United States

75,510 TOY BALLOON. Term 3½ years. J. F. Mulholland, Columbus, O.

75,536 MATTING. Term 14 years. W. S. Vrooman, assignor to The Paine & Williams Co., both of Cleveland, O.

75,553 TIRE. Term 14 years. E. O. Fritch, assignor to Kelly-Springfield Tire Co., both of Cumberland, Md.

75,590 TIRE. Term 14 years. H. F. Schippel, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

75,595 TIRE. Term 14 years. John Vrbanac, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

75,626 TIRE. Term 14 years. Robert Iredell, assignor to The General Tire & Rubber Co., both of Akron, O.

Dominion of Canada

7,945 TIRE. Dominion Rubber Co., Ltd., Montreal, Que.

7,946 TIRE. Dominion Rubber Co., Ltd., Montreal, Que.

Prints

United States

10,923 BEING OLD, YOU MAY FEEL YOUTHFUL. AGE IS ONLY WHAT IT FEELS. THERE IS SPRING AND YOUTH AND COMFORT IN YOUR GOOD-WINGFOOT-YEAR WINGFOOT HEELS. Heels. The Goodyear Tire & Rubber Co., Inc., Akron, O. Published Apr. 12, 1928.

10,966 CHESTY JIM. Tires. The Federal Rubber Co., Cudahy, Wis. Published Feb. 1, 1928.

10,968 USE THUNDERBOLT TIRE PATCH. Tire patch. F. J. Hagerling, St. Louis, Mo. Published Apr. 21, 1928.

10,988 THE OUNCE OF PROTECTION. Sanitary belts, aprons, step-ins and bloomers. A. Stein & Co., Chicago, Ill. Published Oct. 13, 1927.

Rubber Flow Stabilator

The development of the Watson Rubber Flow 18 to 1 Stabilator involves many new principles of design affecting not only the internal construction but the material from which the braking member is made. The name, Rubber Flow, was suggested by this material, rubber, and its smooth or flowing action on the steel drums. It is free from any inclination to grab, stick, bind or freeze and has remarkable wearing qualities.

Ford Steamship Off to Brazil

Within a few weeks the Ford steamship, Lake Ormoc, will be ready to sail for Brazil carrying a corps of engineers, rubber culturists and their staffs of workers. Work will be started immediately to convert into rubber plantations the millions of acres of jungle purchased by Henry Ford in the interior of Brazil. The land already has a number of native trees growing on it and has been found by experts to be admirably suited to the intensive cultivation of rubber.

East Coast Sumatra

The importance of rubber in Sumatra is clearly demonstrated by a comparison of areas and crops as given by the Commercial Association of Medan. Out of a total planted area which in 1926 came to 272,344 hectares, 202,596 hectares were devoted to rubber, the rest being planted to tea, palm oil, copra, tobacco. In 1927, preliminary figures show that the total rubber area came to 217,352 hectares out of a total 292,729 hectares. The capital invested in the various cultures in the province amounted to 503,500,000 guilders, of which 305,000,000 guilders was rubber capital. This situation is one that is not particularly desirable, since the welfare of the province depends to such a great extent on the market conditions of a single item—rubber.

Production and planted area of rubber divided according to the various nationals interested in the crop are given below.

RUBBER PRODUCTION, AREA AND NATIONALITY

Nationality	Planted area hectares	Mature area hectares	Output kilos	Yield per hectare in bearing kilos
British	70,268	54,256	18,645,507	343
Dutch	72,822	47,154	20,240,945	429
American	31,422	27,013	13,813,030	511
Franco-Belgian	27,574	17,927	7,311,327	408
Japanese	4,841	2,734	706,757	258
Swiss	2,676	1,580	698,868	442
Others	7,749	5,559	2,093,598	377
Total	217,352	156,223	63,510,032	407

As compared with 1926 figures, the planted area has increased by about 15,000 hectares, but the mature area shows an increase of less than 3,000 hectares. However, since the output rose from roughly 60,000 tons to about 63,509 tons, it will readily be seen that yield per acre was higher in 1927. In 1926 the average yield per hectare was 389 kilos against 407 kilos in 1926.

British output per hectare fell from 361 kilos to 343 kilos, chiefly due to restriction. Dutch yields rose from 380 kilos to 456 kilos, while American yields top the list with 511 kilos in 1927 against 456 the year before. As in 1926, British and Dutch plantations each take up rather more than a third of the total area, but Dutch outputs have increased and are now higher than the British production. America's share of the total crop has also increased considerably over that of 1926.

Euphorbia Coagulum

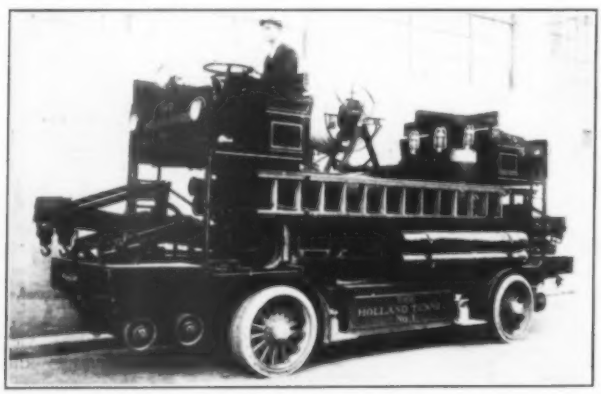
Euphorbia coagulum is now being imported at New York. Its present commercial form is that of white brittle flakes about one-sixteenth of an inch in thickness. This material has possibilities of use in the rubber industry analogous to those formerly afforded by pontianak gums. It is packed 36 pounds net per case and is clean, dry and ready for compounding in rubber mixings.

JELUTONG, BALATA, GUTTA PERCHA, guayule and other crude, scrap and reclaimed rubber imports during the period from January to March, 1928, according to *Our World Trade*, increased 8.3 per cent over the like period for 1927.

Emergency Truck for Holland Tunnel

In the Holland vehicular tunnel now operating between New York and Jersey City danger to life and limb is guarded against by the use of two specially equipped automotive trucks, one of which is pictured in the illustration. These trucks are operated by storage batteries. One is stationed at each end of the tunnel.

The tunnel roadways are twenty feet in width designed to carry two lines of traffic and should a breakdown occur in one lane, traffic can still pass through on the other lane. The problem was how to remove a broken down vehicle without interfering with traffic in the other lane. This was solved by designing vehicles that would steer from either end and required no turning to move out of the tunnel but could drive in to a wreck, couple onto it and by reversing its movement draw the wreck out of the tunnel. Each emergency truck carries a driver and crew of seven men, each seat accommodating four persons. The list of equipment seems ample to cope with any possible emergency and includes the following items on each truck.



Rubber Has Important Use in the Holland Tunnel Emergency Truck

Headlights and tail-lights, permanent searchlights and rear vision mirrors at each end, fire bell, five-ton wrecking cranes at each end, screw jacks, towing dollys of six and nine tons' capacity, tool box with wrenches, hammers, pinch bars, towing rope, chain blocks, hack saws, etc., ladders, plain and extension, portable fire extinguishers and a foam type chemical fire fighting apparatus of two hundred gallons' capacity operated by a pump taking its current from the motive power battery, fire hose mounted on reel, pike poles and fire axes. It will be noted that in the following list of additional emergency apparatus included in the equipment rubber articles are in the majority.

The additional emergency apparatus on each truck consists of four gas masks, four portable searchlights, first aid cabinet, four stretcher outfits with blankets, splints, bandages, etc., rubber coats, hats and boots, patrol covers and a portable inhalator of mine type.

"IT WEARS LIKE IRON" HAS BEEN SAID FOR AGES OF MANY an unlike material withstanding hard service. Nowadays some rubber wares not only stand harder usage than iron, but in one form, a chute lining, rubber is said to show a life of even 80 times that of alloy steel. After a while rubber manufacturers, to get any replacements at all, may, paradoxically speaking, have to put a limit on indestructibility.

Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

	High Pressure Pneumatic Casings					
	Cord			Fabric		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1927	.....	21,527,278	21,733,962	.....	766,581	1,198,549
1928						
January	3,605,064	1,684,750	1,496,047	200,322	56,218	60,404
February	4,394,561	1,697,498	1,244,812	222,655	53,220	28,719
March	4,355,309	1,564,346	1,302,644	235,673	33,168	28,431
April	4,331,499	1,307,759	1,347,854	223,274	16,198	27,523
May	4,152,775*	1,404,097	1,570,710	195,886*	6,787	36,567

	High Pressure Inner Tubes			Balloon Inner Tubes		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1927	.....	27,398,535	29,528,108	.....	25,718,529	25,143,821
1928						
January	5,328,071	1,669,894	2,014,744	4,408,235	2,411,124	2,539,535
February	5,941,626	1,949,539	1,470,668	5,046,021	3,221,756	2,602,362
March	6,071,983	1,740,238	1,442,162	5,782,551	3,683,017	2,856,342
April	6,044,843	1,628,576	1,459,826	6,434,307	3,566,957	2,815,778
May	6,220,912*	1,680,621	1,713,411	7,055,801*	3,695,296	3,011,432

	Balloon Casings			Solid and Cushion Tires		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1927	.....	26,037,452	25,111,903	.....	558,030	558,007
1928						
January	3,656,537	2,377,299	2,489,391	161,329	36,279	33,797
February	4,173,493	3,021,548	2,500,013	156,790	36,328	38,715
March	4,700,534	3,516,480	2,967,476	156,424	42,950	44,665
April	4,983,023	3,309,351	2,983,454	154,477	43,255	42,145
May	5,419,093*	3,658,349	3,235,236	153,205*	46,606	47,604

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires	
	Cotton Fabric Pounds	Crude Rubber Pounds
1927	177,979,818	463,661,466
1928		
January	16,039,819	43,709,438
February	16,923,607	46,468,050
March	18,853,824	48,897,275
April	18,310,791	43,700,630
May	19,167,606	51,061,030

*As of May 31, 1928.

Rubber Association figures representing 75 per cent of the industry.

Rubber Supplanting Leather Belting

In reviewing international trade in belting, E. G. Holt, chief, Rubber Division, United States Department of Commerce, finds that of total shipments of machinery belting from all manufacturing countries, rubber belting is each year furnishing a larger percentage of the exports. In 1920 total shipments of leather belting were 9,471,000 pounds; and in 1927 but 7,350,000 pounds. For the same years the figures of rubber and balata belting (usually grouped) were 10,548,000 and 12,100,000 pounds; and for textile belting 9,621,000 and 8,750,000 pounds.

Thus while the percentage for leather belting has been declining much and for textile belting somewhat less, that for rubber belting has been notably increasing, the 1927 exports being more than double those of 1921. In 1927 the United Kingdom's share was but 34 per cent of the 28,200,000 pounds of world exports of belting (as compared with 55 per cent in 1920) and with 24 per cent for the United States, and 12.3 per cent for Germany. The greater gains were noted for United States exports, this country supplying over 41 per cent of all the rubber and balata belting exported in 1927, and with the prospects of further increase excellent, especially for elevator and conveyer types.

Peruvian Balata Exports Increase

Exports of balata from the Amazonian region of Peru have in a large degree compensated for the steady decrease in shipments of wild rubber. In 1919 balata exports were 3,500 pounds, but last year they rose to 4,514,869 pounds.

MARKET REVIEWS

Crude Rubber

New York Exchange

TRANSACTIONS on the Rubber Exchange from June 25 to July 21 inclusive were 7,391 lots, equivalent to 36,955 tons. This turnover compares with 26,340 tons done from May 25 to June 23 inclusive and reflects 28.5 per cent more business for the monthly period.

Summarized by weekly intervals the market features were as follows: The week closed June 30 was marked by attempts to depress values which seem to have had the opposite effect. Very little buying interest was manifest. At the close of the week transactions were recorded a half cent lower on September, December and March futures than on the same positions at the close of the previous week. The high and low closing prices on these positions for the week ended June 29 were September 19.50 high, 18.70 low; December 19.40 high, 18.70 low; March 19.40 high, 18.50 low.

Market trading for the week ended July 6 was on a restricted scale with fairly steady buying by consumers. Prices exhibited a strong undertone at close. The active positions were September, high 19.00, low 18.50; December, high 18.80, low 18.40; March, high 18.80, low 18.30. On July 6 the week's closing prices on each of these positions were 0.30 cents higher than the low prices just named. The prices for all other positions were nominal at the close of the week.

The week ended July 13 the market closed very strong being influenced by the statistical conditions reflected in the report of the Rubber Association. All positions closed from 10 to 50 points above their corresponding quotations of July 6. During the week September rubber was high 19.30, low 18.80; December, high 19.20, low 18.80.

For the week terminated July 21 prices were stronger and the market tone progressively improved as the statistical position steadily became more bullish. Most of the business was reported as outside purchasing. The week's active positions closed as follows: September and December, both at 19.50. Their range for the week was, September high 19.50, low 19.00; December high 19.60, low 19.10.

New Rubber Grades

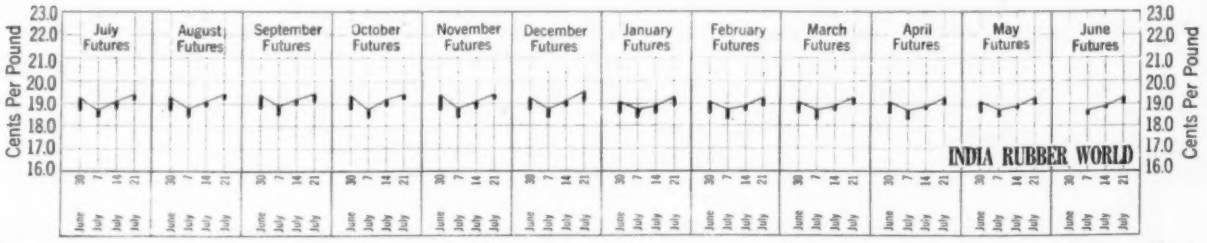
Members of the Rubber Exchange, at a special meeting July 12, approved amendments to the by-laws providing for a second contract to cover trading in six blanket and brown grades of Hevea plantation rubber. The amendments, which are effective September 1 next, will increase the number of grades tenderable against exchange contracts so that they will include approximately 90 per cent of the entire world production of crude rubber.

The new contract will be known as "B.B." as distinguished from the present "A" contract covering the standard grades. The grades which may be delivered against "B.B." contracts follow:

A. B. C. and D. blanket crepes and No. 1 and No. 2 brown crepes. The first two grades are deliverable at contract price and the other four at differentials to be fixed by the Adjustment Committee of the Exchange on the fifteenth day of each month.

While the new grades are substandard so far as the standard grades tenderable against the exchange "A" contract are concerned, they are not lower grades in the sense of being inferior quality. The new grades merely differ in types and color. The consumption of the rubber covered by the new grades is approximately 37.5 per cent of the consumption in the United States.

New York Rubber Exchange—High and Low Monthly Futures



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND

1928	June 25	26	27	28	29	30	July 2	3	4*	5	6	7	9	10	11	12	13	14	16	17	18	19	20	21
June	19.2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
July	19.3	19.3	18.7	18.7	18.7	18.6	18.5	18.4	....	18.5	18.6	18.7	18.8	19.1	19.1	19.0	19.1	19.0	19.2	19.2	19.2	19.4	19.4	19.3
August	19.3	19.3	18.9	18.8	18.7	18.7	18.5	18.4	....	18.6	18.7	18.8	18.9	19.1	19.1	19.0	19.1	19.0	19.2	19.2	19.2	19.4	19.4	19.3
September	19.4	19.4	19.0	18.9	18.8	18.8	18.5	18.5	....	18.7	18.8	18.9	19.0	19.2	19.1	19.1	19.1	19.1	19.1	19.2	19.1	19.4	19.4	19.4
October	19.4	19.3	18.8	18.9	18.7	18.8	18.5	18.4	....	18.6	18.7	18.8	18.9	19.2	19.0	19.0	19.0	19.0	19.2	19.3	19.2	19.4	19.4	19.4
November	19.4	19.3	18.8	18.9	18.7	18.7	18.5	18.4	....	18.8	18.7	18.8	18.8	19.1	19.0	18.9	19.0	19.0	19.2	19.3	19.2	19.4	19.4	19.4
December	19.3	19.3	18.8	18.9	18.7	18.7	18.5	18.4	....	18.6	18.7	18.8	18.9	19.0	19.0	18.9	19.0	19.1	19.1	19.2	19.1	19.4	19.5	19.4
1929																								
January	19.1	19.1	18.8	18.6	18.6	18.6	18.4	18.4	....	18.6	18.6	18.7	18.8	18.9	18.8	18.6	18.7	18.8	18.9	19.2	19.1	19.3	19.3	19.3
February	19.1	19.1	18.8	18.6	18.6	18.6	18.4	18.3	....	18.6	18.6	18.7	18.8	18.9	18.8	18.7	18.7	18.8	18.9	19.1	19.0	19.2	19.3	19.3
March	19.1	19.1	18.8	18.7	18.7	18.6	18.4	18.3	....	18.6	18.6	18.7	18.7	18.9	18.8	18.8	18.8	18.8	19.0	19.1	19.0	19.2	19.3	19.3
April	19.1	19.1	18.8	18.7	18.6	18.6	18.4	18.3	....	18.6	18.6	18.7	18.8	18.9	18.8	18.8	18.8	18.8	19.0	19.1	19.0	19.2	19.3	19.3
May	19.1	19.1	18.8	18.8	18.6	18.6	18.4	18.4	....	18.5	18.7	18.7	18.8	18.9	18.8	18.8	18.8	18.8	19.0	19.1	19.0	19.2	19.3	19.3
June	....	....	....	....	....	....	....	....	....	18.5	18.7	18.7	18.8	18.9	18.8	18.7	18.8	18.8	19.0	19.1	19.0	19.2	19.3	19.3

*Holiday.

Price Differentials

The Board of Governors of the Rubber Exchange approved July 18 the following price differentials between the various grades of Hevea plantation rubber which shall prevail on all deliveries made during August against Exchange contracts: Off quality first latex crepe, one-half cent per pound. Good F. A. Q. ribbed smoked sheets, three-tenths cent per pound. Ordinary F. A. Q. ribbed smoked sheets, six-tenths cent per pound. The differentials were fixed by the Adjustment Committee, of which Robert L. Baird is chairman.

New Members

E. A. Canalizo, of E. A. Canalizo & Co., president of the New York Cocoa Exchange, and George H. Earle, 3rd, of the Flamingo Sugar Mills, Inc., of Philadelphia, have been admitted to membership on the Rubber Exchange of New York.

New York Outside Market

Considerable comment was occasioned by the fact that stocks on hand in the United States and London, as well, have shown a marked recession in the past few weeks. The reduction has brought domestic stocks to about 80,000 tons (estimated) as of July 31, and London stocks to 35,248, actual, as of July 21. This strong statistical position of crude may operate to advance prices in the event of persistence of heavy consumption the remainder of the summer.

The New York outside market during July was generally quiet. Spot ribs closed June 30 at 19⅜ cents buyers, 19¼ cents sellers. In the next week the prices sagged slightly, ribs closing on July 7 at 18⅞ cents buyers, 19 cents sellers without stimulating much buying interest. In the following week, however, prices were firmer and better closing on July 14 at 19⅜ cents buyers, 19½ cents sellers. In the following week ribs continued their advance and closed firm on July 24 at 19¾ cents buyers, 19⅞ cents sellers. Throughout the 4 weeks' period from June 25 to July 21 first latex was quoted steadily one eighth cent above ribs and the latter one half to five eights above No. 2 amber grade. No. 1 Roll Brown was not in abundant supply and ranged from 17¾ to 18¾ cents buyers to 18⅛ to 19 cents sellers.

The general features of the market considered by weekly periods were as follows: The week terminated June 30 was extremely quiet with very little factory interest in evidence. Prices eased off gradually without attracting buyers. The approaching holiday, July 4, served to detract interest in the market. Much shipment rubber was refused by dealers because they could not find ready factory purchases. Paras were quiet but very steady due to the scanty offerings from Brazil. Balatas were dull and neglected.

The market of the week closed July 7 was extremely dull. The holiday falling in mid-week induced many dealers to remain out of town. After the semi-annual factory stock taking more factory interest was expected. There was a fair demand for Paras by dealers and prices were steady and unchanged for Upriver fine at 22⅝ cents buyers, 23 cents sellers. Balatas were dull and prices stiffening because of reluctance by dealers in the primary markets to sell at prevailing prices.

For the week closed July 14 the market was quiet with undertone steady. Foreign markets were firm. Large interests sold December rubber but the offerings were taken freely without disturbing the market. Factories were steadily acquiring nearby rubber. Paras were very steady with some demand for nearby. Balatas moved higher with sales reported at 58½ cents for sheets and 43 cents for block.

During the week terminated July 21 the market was very steady and prices gradually stiffened. A shortage of No. 2 amber, thin clean and roll brown grades brought forth eager bidding. Friday prices were again firm with higher c.i.f. offers and dealers bought for all of next year's positions on a landed basis equivalent to 21⅜ cents. On July 24 spot ribs were 19½ cents, and in fair demand. Paras were a little easier because of freer offerings from Brazil. Balata block sold at 42 cents and Surinam sheet at 48 cents.

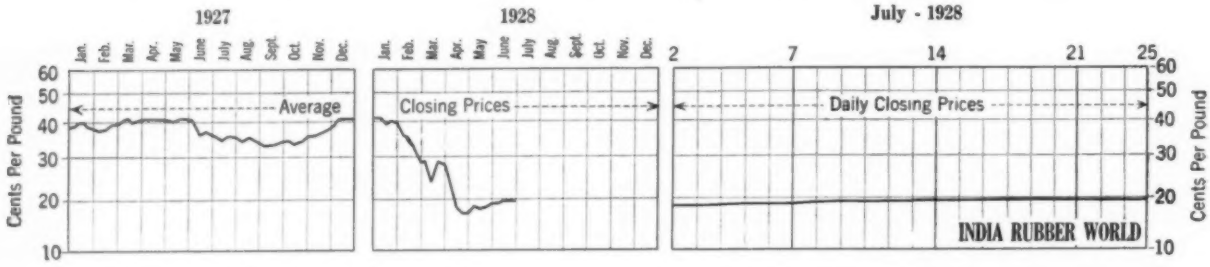
Importations of all grades in June were 25,792 tons, compared with 33,194 tons one year ago. Plantation arrivals for June were 24,752 tons, compared with 31,444 tons one year ago. Total importations of plantation rubber for six months ended June 30 were 201,489 tons compared with 212,108 tons for the corresponding period of 1927. Total importations of all grades of rubber for six months ended June 30 were 212,497 tons, compared with 226,850 tons for the corresponding period of 1927.

RUBBER AFLOAT TO THE UNITED STATES

All Figures in Long Tons

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
June 30..	4,797	1,094	1,670	821	8,382
July 7...	5,231	899	1,601	842	8,573
July 14..	4,403	859	2,249	277	7,788
July 21..	4,879	384	1,648	320	7,231

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

Plantations	June, 1928 25	26	27	28	29	30	July, 1928 2	3	4*	5	6	7	9	10	11	12	13	14	16	17	18	19	20	21
Sheet																								
Ribbed smoked	19⅛	19⅛	19	19	19	19	18⅝	18½	....	18¾	18¾	18¾	19⅛	19¼	19¼	19¼	19⅜	19⅜	19⅜	19½	19½	19⅝	19⅝	19⅝
Crepe																								
First latex	19¾	19¾	19¼	19⅛	19¼	19¼	18¾	18⅝	....	18⅞	19	19	19⅛	19⅜	19⅜	19⅜	19½	19½	19½	19¾	19⅝	19⅞	19⅞	19⅞
No. 2 blanket	19¼	19⅛	18⅝	18½	18⅝	18⅝	18¼	18⅛	....	18⅛	18¼	18⅝	18⅝	18¾	18¾	18¾	18⅞	18⅞	18⅞	19	19⅛	19¼	19½	19½
No. 3 blanket	18⅞	18¾	18⅜	18¼	18⅜	18⅜	18	17⅞	....	18	18	18	18⅜	18½	18⅝	18½	18⅝	18⅝	18⅝	18¾	18¾	19⅛	19¾	19¾
No. 4 blanket	18⅝	18½	18¼	18⅛	18⅛	18⅛	17¾	17⅝	....	17¾	17¾	17¾	18⅛	18½	18⅜	18⅜	18⅜	18⅜	18⅜	18½	18½	18¾	19	19
Thin clean brown	19	18⅞	18½	18¼	18¾	18¾	18	17¾	....	18	18⅛	18⅛	18⅜	18½	18½	18⅝	18⅝	18⅝	18⅝	18¾	18¾	19	19⅛	19⅛
Rolled brown	18⅝	18¼	18⅛	18	17¾	17¾	17¾	17⅝	....	17¾	17¾	17¾	18⅛	18⅛	18⅛	18⅛	18⅛	18⅛	18⅛	18⅜	18⅜	18⅝	18⅞	18⅞
Off latex	19½	19½	19	19	18⅞	18⅞	18½	18⅛	....	18⅝	18⅝	18⅝	19	19⅛	19⅛	19¼	19¼	19¼	19¼	19½	19⅜	19⅝	19⅝	19⅝

*Holiday.

London

During the entire period from June 25 to July 21 inclusive the London market was characterized as chiefly dull and quiet. There were but few price changes and those of minor value. On June 25 spot closed at 9¼ pence which was a slight advance. On June 30 after a succession of dull sessions the week closed with spot at 9⅜ pence.

In the next week the price was 9 pence on the first two days and advanced practically for a few days closing on July 7 at 9¼ pence.

The week ended July 14 spot ribs were generally steady at from 9⅜ pence on July 9 to 9½ pence which was the close on July 14.

The week terminated July 21 was essentially a repetition of the week previous, as to lack of activity but prices were firm and advancing, spot maintaining the 9½ pence level or better for the entire week.

Under date of July 12 Symington and Sinclair, London, point out that some of the larger American consumers have faith in rubber at its present price, evidenced by the fact that a large business has been passing for shipment the whole of next year at about 9½ pence.

The weekly record of London stocks since June 23 is as follows: June 30, 38,611 tons; July 7, 36,915 tons; July 14, 35,925 tons; July 21, 35,248 tons.

Singapore

The market for the past month naturally paralleled that in London. Virtually all its sessions were dull with business slow and prices steady. A prevailing tendency carried prices slightly upward after July 2 when spot closed at 9 pence, to 9½ pence on July 21.

Early in June Guthrie & Co., Ltd., Singapore, noted that a valorization scheme for keeping excess stock off the market, and thereby stabilizing the commodity price, had been put forward from Dutch sources but it was not being seriously regarded by the London market.

New York Quotations

Following are the New York open market rubber quotations for one year ago, one month ago and July 25, the current date

	July 25, 1927	June 25, 1928	July 25, 1928
Plantation Hevea			
Rubber latex (Hevea)...gal.	$1.50 @	$1.50 @	$1.40 @
CREPE			
First latex, spot	.35⅛@.35¼	.19⅞@.20	.20 @.20¼
August	.35¼@	.19⅞@	.20 @.20⅛
August-September	.35¼@	.19⅞@	.20 @
October-December	.35⅛@	.19¾@.19⅞	.19⅞@
January-March	.35 @	.19¾@	.19⅞@.19¼
Off latex, spot	.34¼@	.19½@	.19⅝@
"B" Blanket, spot	.32 @	.19¼@	.19 @
August	.32 @	.19¼@	.19 @
August-September	.32 @	.19¼@	.18⅞@
October-December	.32¼@	.19¼@	.18¾@
January-March	.32½@	.19¼@	.18¾@
"C" Blanket, spot	@	.18¾@	.18¾@
Brown No. 1	.31 @	.19 @	.19 @.19¼
Brown No. 2	@	.18⅞@	.18¾@.19
Brown, roll	.28 @	.18½@	.18¾@
Sheet			
Ribbed, smoked spot	.34⅞@.35	.19¾@	.19¾@
August	.35 @	.19⅝@.19¾	.19⅝@.19¼
August-September	.35¼@	.19⅝@.19¾	.19⅝@
October-December	.35¼@.35½	.19⅝@.19¾	.19½@
January-March	.35½@.35¾	.19¾@	.19½@.19⅝
East Indian			
FONTIANAK			
Banjermasin	.09¼@	.09½@	.09 @.09½
Pressed block	.16 @	.14½@	.14 @.15
Sarawak	.09¾@	.09½@	.09 @.09½
South American			
PARAS			
Upriver, fine	.30¾@	.22 @	.22¾@
Upriver, fine	*.40¼@	*.26½@	*.27 @
Upriver, medium	@	@	.16½@
Upriver, coarse	.20¼@	.15 @	.15½@
Upriver, coarse	*.31 @	*.22½@	*.22½@
Islands, fine	.28 @	@	.22 @
Islands, fine	*.37½@	*.26 @	*.26½@
Acre, Bolivian, fine	.31 @	.23 @	.23½@
Acre, Bolivian, fine	*.40½@	*.27 @	*.27½@
Beni, Bolivian	.31 @	.23½@	.23¾@
Madeira, fine	.30½@	.22 @	.22½@

	July 25, 1927	June 25, 1928	July 25, 1928
South American			
PARAS—*Continued*			
Peruvian, fine	$0.28½@	$0.21½@	$0.22 @
Tapajos, fine	.28 @	.20½@	.22 @
CAUCHO			
Upper caucho ball	.21 @	.14 @	.13½@
Upper caucho ball	*.31 @	*.22½@	*.22½@
Lower caucho ball	.19 @	.13½@	.13 @
Maniçobas			
Ceará negro heads	.22 @	†.17 @	@
Ceará scrap	.12 @	†.09 @	@
Manicoba, 30% guaranteed	.21 @	†.19 @	@
Mangabiera, thin sheet	.21 @	†.19 @	@
Centrals			
Central scrap	.19½@.20	.15½@	.14¼@.14¾
Central wet sheet	.16 @.17	.08 @	.10 @.12
Corinto scrap	.19½@.20	.15½@	.14¼@.14¾
Esmeralda sausage	.19½@.20	.15½@	.14¼@.14¾
Guayule			
Duro, washed and dried	.30 @	.20 @	.20 @
Ampar	@	.21 @	.21 @
Gutta Percha			
Gutta Siak	.22 @.22½	.18 @	.18 @.19
Gutta Soh	@	.27 @	.26 @.27
Gutta Macassar	2.50 @3.00	2.60 @2.90	2.00 @2.50
Balata			
Block, Ciudad Bolivar	.34 @.36	.39 @	.39 @.40
Columbia	.34 @.35	.39 @	.40 @.43
Manaos block	.25 @.27	.42 @	.40 @.42
Panama	.33 @.34	.44 @	.38 @.40
Surinam, sheet	.54 @.57	.50 @	.46 @.48
Amber	.58 @.60	.54 @	.50 @.52
Chicle			
Honduras	‡.67 @	‡.68 @	‡.68 @
Yucatan, fine	‡.67 @	‡.68 @	‡.68 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Low and High New York Spot Prices

PLANTATIONS	1928*	July 1927	1926
First latex crepe	$0.19 @$0.20	$0.34¾@$0.37½	$0.39½@$0.42½
Smoked sheet, ribbed	.18¾@ .19⅞	.34½@ .36⅞	.39¼@ .42½
PARAS			
Upriver, fine	.21½@ .23	.29½@ .31½	.37¾@ .41
Upriver, coarse	.14¾@ .15¾	.19½@ .21	.23 @ .38½
Islands, fine	.18 @ .19	.26½@ .28	.35 @ .39

*Figured to July 25, 1928.

BRITISH MALAYA IMPORTED 532 LONG TONS OF RUBBER FROM Brunei during 1927.

A GOOD MIXER NEVER KEEPS A BIG BANK ROLL, AT LEAST ON A mill. A veteran rubber foreman claims that better quality with as much quantity comes from feeding a compound gradually.

Odd Result in Gas Proofing Fabrics

At a recent British symposium on rubber gas proofing it was pointed out that impermeability to hydrogen was obtained in balloon cloth by applying a rubber minimum of sixteen coats per 100 gm. per square meter, and that experience also proved the advantage of many superposed thin films for such purpose, as contrasted with rubber sheet not applied to fabric and which, as a general rule, is not built up of many thin coats. Dr. H. A. Daynes, who had read paper on "The Permeability of Rubber and Methods of Measuring it," also observed that "it was a remarkable fact, for which adequate explanation has not yet been offered, that layering 100 gm. of rubber per square meter on to a textile would make a sheet as impermeable as could be made with 200 gm. of rubber laid in a single uniform sheet."

Reclaimed Rubber

THE consumption of reclaimed rubber during the first six months of the current year, estimated at 195,000,000 pounds was of record proportions. The undiminished demand now prevailing indicates the probability of matching this record in the second six months.

The demand for the grades characterized by light gravity and high rubber contents is liable to increase with the tightening of the statistical position of crude. The outlook is also favorable for a stronger demand for those grades of tire reclaim made from the highest class of raw materials.

Prices for the grades listed below remain practically unchanged with three exceptions which have decreased only an eighth to a quarter of a cent. The bulk of the demand is naturally in the tire grades which are firm at the prices of a month ago. White, gray and red qualities are finding a ready market. Solid tire reclaim is a steadily selling specialty that meets the needs for certain mechanical rubber products.

The reclaim market continues strongly in favor of the buyer as to both price and the intrinsic merit of the goods.

New York Quotations

July 25, 1928

High Tensile	Specific Gravity	Price Per Pound
Super-reclaim, black	1.20	$0.13½@$0.14
red	1.20	.13½@ .13¾
Auto Tire		
Black	1.21	$0.07¾@$0.08
Black selected tires	1.18	.08¼@ .08½
Dark gray	1.35	.09¾@ .10
Light gray	1.38	.12 @ .12½
White	1.40	.13½@ .14
Shoe		
Unwashed	1.60	.07¾@ .07½
Washed	1.50	.10 @ .10¼
Tube		
No. 1	1.00	.15 @ .15½
No. 2	1.10	.11 @ .11½
Miscellaneous		
Red	1.35	.13½@ .13¾
Truck tire, heavy gravity	1.55	.07¼@ .07½
Truck tire, light gravity	1.40	.07¾@ .08
Mechanical blends	1.60	.06¾@ .07½

Rubber Scrap

THE demand for pneumatic tires during July was very quiet. The margin of stocks on hand has not increased over that of a month ago because of lack of activity on the part of collectors.

Boot and shoe scrap is still so low in price that trading in these grades does not warrant replacement of dealers stocks. Practically the same conditions hold with regard to solid tires. Only the steel bases represent any profitable value and not the rubber owing to the cost of its removal.

Mechanical, air brake hose and mixed black scrap are selling freely at prices essentially unchanged from a month ago. The only important variation in price being $2.00 per ton less for soft regular hose.

New York Quotations
Carload Lots
July 25, 1928

Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	$22.00	@$23.00
Beadless	ton	29.00	@30.00
White auto tires with beads	ton	39.00	@40.00
Beadless	ton	50.00	@52.00
Mixed auto peelings	ton	31.00	@32.00
Solid—			
Mixed motor truck, clean	ton	17.50	@18.00
Inner Tubes			
No. 1, floating	lb.	$0.06¾	@$0.06½
No. 2, compounded	lb.	.03½	@ .03¾
Red	lb.	.04¾	@ .05
Mixed tubes	lb.	.03½	@ .03⅝
Boots and Shoes			
Boots and shoes, black	lb.	.01¾	@ .01⅞
Red and white	lb.	.00½	@ .00¾
Trimmed arctics, black	lb.	.00½	@ .00¾
Untrimmed arctics	lb.	.00½	@ .00⅝
Tennis shoes and soles	lb.	.00½	@ .00¾
Hard Rubber			
No. 1 hard rubber	lb.	.06	@ .07½
Battery jars, black compound	lb.	.01	@ .01½
Mechanicals			
Mixed black scrap	lb.	.00½	@ .00⅝
Heels	lb.	.00½	@ .00⅝
Hose, air brake	ton	20.00	@25.00
regular soft	ton	13.00	@15.00
No. 1 red	lb.	.02	@ .02¼
No. 2 red	lb.	.01	@ .01¼
White, druggists' sundries	lb.	.02	@ .02½
Mechanical	lb.	.01½	@ .01¾

International Crude Rubber Syndicate

A REVIEW of the development of the crude rubber industry during the last few years makes it quite clear that one-sided regulations, such as the Stevenson Restriction Scheme, lead to nothing but prolonged conflict and financial loss. And yet the propositions that have been discussed of late by British and Dutch planting interests separately and conjointly for regulating the industry by central selling schemes and valorization plans, show that those most concerned have failed to learn this lesson, for the newer proposals are different in form only but not in fact or method, and producers would thereby actually expose themselves more than ever to the opposition measures of consumers.

Recognizing all this, Dr. Kurt Maier, in the latest export number of the *Gummi-Zeitung*, submits a new proposal which takes into consideration the productions and price conditions of producing countries; the demands of the manufacturing industry as regards crude rubber prices, besides world supply and demand based on the joint estimates of the producers, dealers and consumers. This proposition aims at the establishment of an international crude rubber syndicate in which the rubber manufacturing industries of the world are admitted to equal partnership with producers. The syndicate would in joint sessions, aim at solving all technical and scientific problems concerning planting matters and at regulating prices by buying and selling at the various product exchanges.

An advisory board of consumers would be given a seat and voting rights whenever such matters as price fixing and the determination of quotas had to be decided on. But where affairs relating purely to planting, freight, tariff, transportation, etc., were to be considered, an advisory board of producers would have the final right of decision.

The advisory board of producers would act independently in matters connected only with the technics of production, but where the problems were also of great importance to manufacturers, decisions would be made on the basis of motions drawn up by the advisory board of producers in joint session with the advisory board of consumers, under the chairmanship of the syndicate management constituted of an equal number of representatives from both sides.

Thus, it is expected, frictionless cooperation could be arrived at and a reasonable accommodation of output to demand would be one salutary consequence.

South African Rubber Mfg. Co.

The Leyland & Birmingham Rubber Co. has acquired a controlling interest in the South African Rubber Mfg. Co. and the plant has been removed from Howick in Natal to Germiston. The company will produce tennis balls in addition to rubber heels, hose and a number of miscellaneous rubber articles.

Compounding Ingredients

MANUFACTURING activity in the tire and tube division of the rubber industry has progressed during the past month with no appreciable decrease of volume. It is proceeding at virtually full capacity. Mechanical rubber goods factories also are fairly busy. This activity is reflected in the steady demand for reclaim, and compounding ingredients, especially for those that aid in competitive compounding.

ACCELERATORS. There is a strong routine demand for accelerators, especially for those that have demonstrated their practical value for workability and results. A new member in a well tried group has recently been announced as A-32.

ANTI-OXIDANTS. This classification of ingredients was increased in July by the addition of a new member in a well-known series, namely Age-Rite White. As the name implies this anti-oxidant is for use in white stocks. Of equal importance is the fact that it is particularly well adapted for the preservation of acid cured goods.

BENZOL. The consumption of this material was very active in all lines in July and higher prices are indicated.

CARBON BLACK. Exports have been heavy recently. The tonnage sought by the rubber industry was moderately large. "Gastex," a new carbon black for which special merit is claimed for its value in rubber compounding, is now listed in the market.

CLAY. Clay is established as the cheapest reinforcing ingredient for competitive reinforcement of rubber and is moving into consumption in correspondingly heavy tonnage.

DEGRAS. The merits of degras as a softener and dispensing material are steadily gaining in the appreciation of rubber workers.

LITHARGE. This material has been in routine demand only. Prices unchanged.

LITHOPONE. The rubber industry has placed its orders for future supply covering its needs for the second half year.

MINERAL RUBBER. This ingredient moves in ever increasing tonnage with each succeeding month.

SOLVENT NAPHTHA. There is no cessation of demand for solvent naphtha. Prices are firm.

V. M. P. NAPHTHA. Stocks are heavy. Demand very active. Price advance is probably due soon.

STEARIC ACID. For the last several weeks the market has been steady.

ZINC OXIDE. Prices are firm and unchanged. Good demand by the rubber industry is reported.

New York Quotations

July 25, 1928

Accelerators. Inorganic

Lead, carbonate	lb.	$0.08¼	@
Lead, red	lb.	.11⅞	@
sublimed white	lb.	.07¼	@
sublimed blue	lb.	.07¼	@
super-sublimed white lead	lb.	.08¼	@
Lime, R. M. hydrated	ton	12.50	@
Litharge	lb.	.08½	@
Magnesia, calcined	lb.	.45	@ .60
carbonate	lb.	.06	@ .07
Orange mineral A.A.A.	lb.	.11¼	@

Accelerators, Organic

A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
A-32	lb.		@
Aero X	lb.	.60	@
Aldehyde ammonia	lb.	.65	@ .70
B. B.	lb.		@
Captax	lb.		@
Crylene, hard form	lb.		@
Paste	lb.		@
Di-ortho-tolylguanidine	lb.	.48	@ .50½
D. P. G.	lb.	.40	@ .42½
Ethylidine aniline	lb.	.45	@ .47½
Formaldehyde aniline	lb.	.31	@ .35½
Grasselerator 102	lb.	.58½	@ .61
552	lb.	4.45	@
808	lb.	1.00	@ 1.15
833	lb.	1.40	@ 1.50
Heptene	lb.		@
Hexamethylene tetramine	lb.	.57½	@ .61
Lead oleate, No. 999	lb.	.15	@
Witco	lb.	.13	@
Methylene dianiline	lb.	.36	@ .37
Monex	lb.		@
Piperidine pentamethylene dithio carbamate	lb.	4.45	@ 4.60
Plastone	lb.		@
R. & H. 40	lb.	.40	@ .42½
50	lb.	.40	@ .42½
Safex	lb.		@
Super-sulphur, No. 1	lb.		@
No. 2	lb.		@
Tensilac No. 39	lb.	.50	@ .52½
No. 41	lb.	.50	@ .52½
Thermlo F.	lb.	.50	@ .55
Thionex	lb.	3.25	@
Thiocarbanilid	lb.	.23	@ .32
Trimene	lb		@
base	lb.		@
Triphenylguanidine	lb.	.65	@ 67½
Tuads	lb.		@
Vulcanex	lb.	.60	@ .62
Vulcanol	lb.	.90	@ .92
Vulcone	lb.	.60	@ .62
ZBX	lb.		@
Z-88	lb.	.50	@ .60
Zimate	lb.		@

Acids

Acetic 28% (bbls.)	100 lbs.	3.37½	@ 3.62½
glacial (carboys)	100 lbs.	12.41	@12.66
Sulphuric, 66°	100 lbs.	1.60	@

Alkalies

Caustic soda, solid	lb.	$0.03	@

Anti-Oxidants

Age-Rite, powder	lb.		@
resin	lb.		@
white	lb.		@
Autox	lb.		@
Neozone	lb.	.72	@ .74
A	lb.	.65	@ .67
Oxynone	lb.	.68	@ .90
Resistox	lb.	.54	@ .65
Stabilite	lb.	.64	@
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.07	@ .09
Carbon (see compounding ingredients)			
A. & W. nonfil No. 1	lb.	.40	@
Drop	lb.	.05½	@ .15
Gastex	lb.		@
Lampblack (commercial)	lb.	.09	@

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Akco red	lb.	1.40	@ 3.00
Du Pont, N.	100 lbs.	1.35	@
Marine, A. C.	100 lbs.	1.30	@
S R.	100 lbs.	1.00	@
2 G.	100 lbs.	.90	@
Huber Brilliant	lb.	4.20	@ 4.70
Prussian	lb.	.33	@ .45
Ultramarine	lb.	.09	@ .23

BROWN

Huber Mocha	lb.	1.60	@ 2.10
Sienna, Italian, raw	lb.	.05½	@ .12½

GREEN

A. & W. green	lb.	1.25	@ 3.00
Akco green	lb.	1.55	@ 4.25
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
Du Pont, A. C.	100 lbs.	3.00	@
4 G.	100 lbs.	.60	@
G. L.	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Huber Brilliant	lb.	4.35	@
Oxide of chromium	lb.	.29	@ .38

ORANGE

Du Pont, 2 R.	100 lbs.	1.40	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@
Huber Persian	lb.	.50	@ 1.00

RED

A. & W. red	lb.	0.75	@ 3.50
purple	lb.	2.00	@ 4.00
Akco red	lb.	1.50	@ 2.10
Antimony, golden, No. 40	lb.		@
No. 60	lb.	.16	@ .20
golden 15/17%	lb	.21	@ .23
Aristi	lb.	2.75	@
Huber Brilliant	lb.	1.35	@ 1.85

Colors—(Continued)

RED

Antimony			
Crimson, R.M.P. No. 3	lb.	$0.48	@$0.65
Sulphur free	lb.	.50	@ .55
7-A.	lb.	.35	@
Z-2	lb.	.22	@
Vermilion, No. 5	lb.		@
No. 15	lb.		@
Du Pont, R. I.	100 lbs.	1.75	@
6 B.	100 lbs.	.90	@
Brilliant A. C.	100 lbs.	.90	@
Iron Oxides			
bright pure domestic	lb.	.12	@
bright pure English	lb.	.11	@ .14
bright reduced English	lb.	.08½	@ .10
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.11	@
Indian (maroon), reduced English	lb.	.07½	@ .09
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.03	@ .04¼
Sunburnt red	lb.	.14	@
Venetian reds	lb.	.02	@ .06
Vermilion, Eng. quicksilver	lb.	1.90	@

WHITE

Lithopone	lb.	.05½	@ .05⅞
Albalith	lb.		@
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05¼	@ .05¾
Sterling	lb.		@
Vanolith	lb.	.05½	@
Titanox	lb.	.10	@ .10½
Zinc Oxide			
AAA (lead free)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06⅛	@ .06⅞
Z (8% leaded)	lb.	.06⅜	@ .06⅞
French Process			
Green seal	lb.	.10⅞	@
Red seal	lb.	.09⅞	@
White seal	lb.	.11⅞	@
Kadox	lb.		@
XX	lb.		@

YELLOW

A. & W. yellow	lb.	2.00	@ 4.00
Akco yellow	lb.	1.40	@ 2.75
Cadmium sulphide	lb.	.90	@ 1.10
Chrome	lb.	.16	@ .17
Du Pont N.	100 lbs.	4.00	@
R. W.	100 lbs.	.78	@
Grasselli cadmium	lb.		@
Huber canary	lb.	3.30	@ 3.80
Ochre, domestic	lb.	.01¾	@ .02½
Oxide, pure	lb.	.08½	@
Zinc imported	lb.	.25	@

Compounding Ingredients

Aluminum flake (sacks,c.l.)	ton	21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate pwd.	lb.	.11	@ .12
lump	lb.	.11	@ .12
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	57.50	@60.00

Compounding Ingredients *(Continued)*

Barytes, imported	ton	$27.00	@$34.00
dry ground, white	ton	35.00	@
dry ground, off color	ton	22.50	@
No. 1 Missouri, water ground and floated, St. Louis	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.03¾	@
pulp	ton	40.00	@
Carbon Black			
Aerfloted arrow	lb.	.08	@ .12
Compressed	lb.	.07½	@ .11¾
Uncompressed	lb.	.07	@ .11
Micronex	lb.	.08	@ .12
Carrara filler	ton	20.00	@
Chalk	ton	12.00	@
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.01¼	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton		@
Perfection	ton	14.00	@
Suprex	ton	.08	@ .20
Tensulite	ton	14.00	@25.00
Cotton flock, black	lb.	.13	@
light-colored	lb.	.09	@ .10
white	lb.	.12	@ .27
Glue, high grade	lb.	.24	@ .28
low grade	lb.	.21	@ .25
Infusorial earth	ton	45.00	@
Mica, amber (fact'y)	ton	80.00	@
Pumice stone, powd	lb.	.02½	@ .04
Rotten stone (bbls.)	lb.	.02½	@ .04½
Soap bark	lb.	.15½	@ .16
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	15.00	@
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Velvetex	lb.	.04½	@ .08
Whiting:			
Domestic	100 lbs.	1.00	@
English, cliffstone	100 lbs.	1.50	@
Quaker	ton		@
Snow white	ton		@
Sussex	ton		@
Vancolloid	ton	27.00	@
Vansulite	ton	17.40	@26.00
Westminster Brand	100 lbs.		@
Witco (c.l.) (fact'y)	ton	12.00	@
Whiting, imp. chalk	100 lbs.	.90	@ 1.00
Paris White, Eng. Cliff.	100 lbs.	1.50	@ 3.00

Factice—See Rubber Substitutes

New York Quotations

July 25, 1928

Mineral Rubber

Fluxrite (solid)	lb.	$0.05	@$0.06
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton		@
Ohmlac Kapak, M. R.	ton	40.00	@90.00
M-4	ton	75.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	40.00	@42.00
M. R. granulated	ton	50.00	@52.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. gran. (fact'y)	ton	38.00	@80.00
Vansul Puro	ton	27.00	@33.00

Oils

Mineral	gal.	.18	@
Kerosene	gal.	.15	@
Rapeseed	gal.	.85	@
Red oil, distilled	lb.	.09¾	@ .10¼
Rubber process	gal.	.22	@
Spindle	gal.	.30	@

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.08	@ .15
White	lb.	.09	@ .16

Softeners

Burgundy pitch	100 lbs.	5.00	@
Atlas	100 lbs.	6.50	@
Corn oil	lb.	.10½	@
Cotton oil	lb.	.11	@
Cycline oil	gal.	.27	@ .34
Degras	lb.	.03½	@ .04
Fluxrite (fluid)	lb.	.05	@ .06
Hexalin	lb.	.60	@
acetate	lb.	.75	@
Moldrite	lb.	.07½	@ .08
Palm oil (Lagos)	lb.	.09½	@
Palm oil (Niger)	lb.	.08½	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08¼	@ .08½
Pigmentar	gal.	.33	@ .38
Pine oil, steam distilled	gal.	.68	@ .70
Rosin K	bbl.	10.00	@
Rosin oil, compounded	gal.	.30	@
No. 3	gal.	.56	@
No. 556	gal.	.48	@
Rubite	lb.	.10½	@
Rubtack	lb.	.08½	@
Shellac, orange	lb.	.70	@

Softeners—*(Continued)*

Stearex	lb.	$0.11	@$0.15
Stearic acid, double pressed	lb.	.11¾	@ .12¾
Tackol	lb.	.09	@ .15
Tar (retort)	bbl.	12.50	@13.00
Tasco W-S No. 1	lb.	.06	@
A	lb.	.05	@
Vansulol	lb.	.10½	@
Vantar (Pine Tar)	gal.	.35	@
Waxene	lb.	.30	@ .40
Woburn oil	lb.	.05½	@ .07

Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.27	@ .28
Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums)	lb.	.05	@ .06
tetrachloride (99.7%, 13.28 lbs. gal.) (drums)	lb.	.07	@ .07½
Gasoline No. 303			
Tankcars	gal.	.18	@
Drums, c. l.	gal.	.28	@
Drums, l. c. l.	gal.	.40	@
Dip-Sol	gal.	.12	@
Rubberlene	gal.	.11½	@
Rub-Sol	gal.	.10½	@
Solvent naphtha	gal.	.35	@
Sweet rubber cement naphtha	gal.	.15	@
Turpentine, Venice	lb.	.20	@
steam distilled	gal.	.53	@ .54

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.)	100 lbs.	2.40	@ 2.75
(l.c.l.)	100 lbs.		@
Superfine commercial flour			
(210 lb. bbls.)	100 lbs.	2.55	@ 3.10
(100 lb. bags)	100 lbs.	2.20	@ 2.80
Tire brand, superfine	100 lbs.	1.90	@ 2.25
Tube brand, velvet	100 lbs.	2.40	@ 2.75
Sulphur chloride	lb.	.03¼	@ .03½
Vandex (selenium)	lb.		@

(See also Colors—Antimony)

Waxes

Beeswax, white, com	lb.	.55	@
carnauba	lb.	.33	@ .60
ceresine, white	lb.	.12	@
montan	lb.	.07½	@
ozokerite, black	lb.	.27	@
green	lb.	.28	@
Paraffin			
122/124 white crude scale	lb.	.05	@
124/126 white crude scale	lb.	.05	@
123/125 fully refined	lb.	.04⅞	@ .05
125/127 fully refined	lb.	.05¼	@

Tire Dealers' Price Agreement

Retail tire dealers on the Pacific Coast complain that, although the volume of business has increased considerably since the cut in tire prices in the middle of June, net profits have been sharply reduced through the average 12½ per cent drop in prices. An effort is being made to effect a general price agreement with the cooperation of manufacturers, so that they will get the benefit of a 25 per cent mark-up. Although many are now selling on a basis of 11 1/9 per cent mark-up with 10 per cent off to bona fide national and extra large accounts, and 5 per cent over sales and service on all other corporation accounts, a considerable number are said to net scarcely 6 per cent on total sales.

Several of the larger tire manufacturers have already indicated their willingness to aid the dealers. The latter have been advised by one tire-making concern that no further sales and service prices will be put out so that dealers will be free to make any fair charge for goods and service, and another is going to furnish dealers with a list of wholesale prices which may be displayed to buyers, but on which the utmost possible discounts will be allowed to dealers. Both plans may mitigate the discontent; at least they are being favorably received. Yet a radically different one may also be evolved and be more generally adopted.

Embossed Effects with Sheet Gum

In one process mattress and various convex, studded, and raised figure effects are produced in rubber sheeted goods by using two layers of light gum stock between which is placed a thin sheet of paper on which the designs have been cut out. When the whole is set in a curing press adhesion occurs only where the rubber surfaces are in actual contact. On removal the sections protected by the paper may then be given a relief appearance by being suitably inflated through an opening left in the edge, and the aperture may be either closed with cement or a permanent valve inserted.

Pip-Pip Accelerator

The material known for short as Pip-Pip is a white crystalline body which decomposes slightly upon long exposure to the air. Chemically it is piperidine pentamethylene dithiocarbamate. It is frequently erroneously called piperidine piperidyl dithiocarbamate. It is an ultra rapid accelerator of vulcanization. The use of this type of accelerator is limited to stocks requiring only a small amount of milling, cements, quick repair stocks, etc. It is not suitable for general purposes nor in any stock which will be allowed to stand for an appreciable time before vulcanizing. When compounded in a zinc stock it will cure the rubber in 2 or 3 days at room temperature and in from 3 to 10 minutes at 10 pounds of steam.

Age-Rite White

Age-Rite White is a new anti-oxidant now being supplied to manufacturers of "acid" cured goods. This line of rubber wares has not hitherto had the benefit of an effective anti-oxidant. One per cent of Age-Rite White preserves acid cured goods. The new ingredient is also a strong anti-ager for all light colored ordinary heat cured goods containing sulphur and the usual organic accelerators. For this purpose a half of one per cent is recommended in such goods.

Cotton and Fabrics

AMERICAN COTTON. The price for middling spot cotton on July 2 was 22.80 cents compared with 21.05 cents on June 1. The price remained above 22 cents for two weeks and on July 14 was exactly at that level. On July 24 the spot price was 21.05 cents. The advance preceding the first of July was due to unfavorable weather reports and crop advances.

The government's estimate of the area of cotton under cultivation as of July 1 showed higher than expected. The acreage reported was 46,695,000 which was 5 per cent above private estimates or 4,000,000 acres above that of one year ago. This indicates a prospective crop of 13,650,000 bales. The crop is generally considered about three weeks late to date. With the usual mid-season crop deterioration to come, prices are liable to advance in August.

EGYPTIAN COTTON. The leading feature of staples in July was the sharp decline of Sakels and Uppers, especially the former. Excellent crop prospects in Egypt and lack of buying by spinners were the causes of the decline. Advices from England and the Continent indicate poor business in fine yarns and cloths. The same is true in the United States. In consequence the effect on the raw material is depressing. On the other hand the acreage restrictions in Egypt should insure a very moderate crop and from present indications the carry-over in Alexandria at the end of this season will be considerably less than a year ago.

AMERICAN COTTON. American staples are not moving in any volume notwithstanding their cheapness and the fact that the growing crop in the Delta is making better progress than was evident earlier in the season. The carry-over of American staples at the end of the current season should not be large.

PIMA COTTON. Advices from Arizona indicate that the crop there is progressing very well indeed. The plant is early and there is considerable increase of acreage.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The demand for these goods is fair to good, with signs of improvement. Prices are firmer with marked tendency to advance. The supplies in consumers' hands are not large and mill stocks are being held well in hand. At present prices mills are unable to manufacture at a profit.

SHEETINGS. The market for sheetings is rather dull and prices are unchanged from a month ago.

TIRE FABRICS. Conditions in the tire fabric market at present seem to be that buyers are hesitating about placing many commitments, probably due to the fact that cotton has worked into a higher price position. This has necessitated higher prices for fabrics but, with the impending harvesting of the crop, buyers are hoping for lower prices later. Whether their hope will be realized or not depends upon the volume of cotton produced. This cannot be known for some time therefore the prospects are that most buyers will operate on a hand-to-mouth basis during the next two months.

New York Quotations

July 25, 1928

Drills

38-inch 2.00-yard	yard	$0.18½@
40-inch 3.47-yard		.10⅞@
50-inch 1.52-yard		.25 @
52-inch 1.90-yard		.20 @
52-inch 2.20-yard		.17½@
59-inch 1.85-yard		.20⅞@

Ducks

38-inch 2.00-yard D. F.	yard	.19½@
40-inch 1.45-yard S. F.		.26¼@
72-inch 1.05-yard D. F.		.39⅛@
72-inch 16.66-ounce		.43¾@
72-inch 17.21-ounce		.45⅝@
MECHANICAL		
Hose and belting	pound	.37 @
Specials		.41 @
TENNIS		
52-inch 1.35-yard	yard	.29⅝@

Hollands

RUBBER TRADE SPECIAL		
R. T. 3 A.		
31-inch	yard	.16 @
40-inch		.20 @
RED SEAL		
36-inch		.15½@
40-inch		.16½@
50-inch		.25 @
GOLD SEAL		
40-inch, No. 72		.20¼@
40-inch, No. 80		.22 @

Osnaburgs

40-inch 2.35-yard	yard	$0.16⅛@
40-inch 2.48-yard		.15⅜@
40-inch 3.00-yard		.12⅞@
40-inch 10-oz. part waste	lb.	.33 basis
37-inch 2.42-yard		.15¾@

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	yard	.11¼@
Bombazine 60 x 48		.10½@
Plaids 60 x 48		.12½@
Plaids 48 x 48		.11½@
Surface prints 64 x 60		.13 @
Surface prints 60 x 48		.12½@
Print cloth 38½-in., 60 x 64		.07⅝@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.12¾@ .13
48 x 48, 2.85-yard		.11½@ .11¾
64 x 68, 3.15-yard		.12⅜@
56 x 60, 3.60-yard		.10¾@
44 x 48, 3.75-yard		.09½@ .09⅜

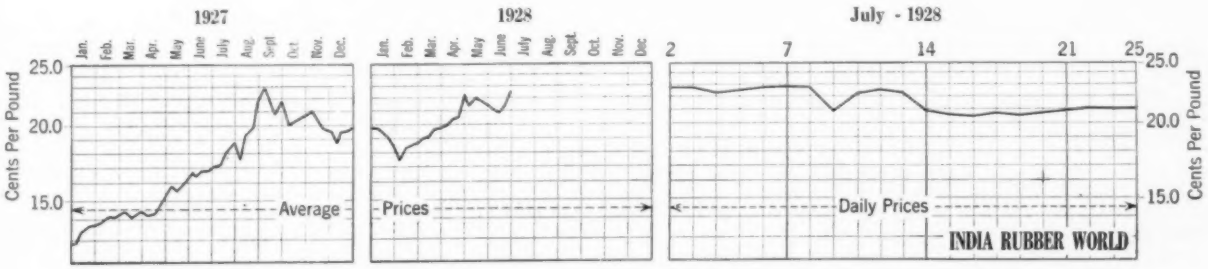
Sheetings, 36-inch

48 x 48, 5.00 yard	yard	.07⅛@
40 x 44, 6.15-yard		.06⅛@ .06¼

Tire Fabrics

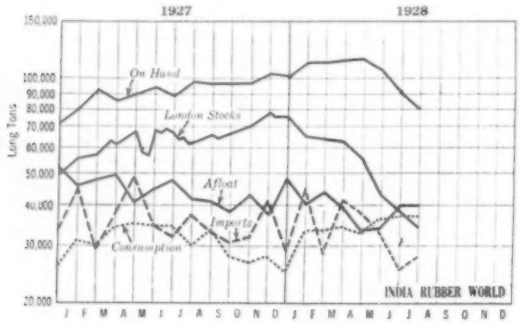
SQUARE WOVEN 17¼-ounce		
Egyptian, karded	pound	@
Peeler, karded		$0.48 @
BUILDER 23/11		
Peeler, karded	pound	.48 @
BUILDER 10/5		
Peeler, karded	pound	.40 @
CORD 23/5/3		
Egyptian, combed	pound	@
Egyptian, karded		@
Peeler, karded, 1 1/16-in		.48 @
CORD 23/4/3		
Peeler, karded	pound	.49 @
CORD 23/3/3		
Peeler, karded	pound	.57 @
CORD 15/3/3		
Peeler, karded	pound	.46 @
CORD 13/3/3		
Peeler, karded	pound	.45 @
LENO BREAKER		
8-oz. Peeler, karded	pound	.49½@
10-oz. Peeler, karded		.49½@
CHAFER		
9.5-oz. Peeler, karded	pound	.44 @
12-oz. Peeler, karded		.43 @
14-oz. Peeler, karded		.49 @

Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton



Imports, Consumption and Stocks

The accompanying graph covers crude rubber importation, consumption and stocks for 1927 and the first 7 months of 1928. Stocks on hand June 30 were 90,000 tons or 10,000 tons less than



U. S. Imports, Consumption and Stocks

was estimated May 31. Consumption during June was correspondingly higher, namely, 37,676 tons. This figure is 4,993 tons more than the corresponding item for May and slightly above that for April and probably indicates increased output of tires.

London stocks have been drawn upon in decreasing amounts. The weekly withdrawals from this source for the first three weeks of July ran respectively 1,596 tons, 990 tons and 677 tons, leaving the London stock for July 21 at 35,248 tons. June imports ran 3,208 tons less than the estimate.

July estimated consumption is set as high as the actual for June proved to be and prospective stocks on hand at 80,000 tons.

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

Twelve Months	Imports Tons	Consumption Tons	Stocks: On Hand Tons	Stocks: Afloat Tons	Stocks: London Tons	Stocks: Singapore and Penang Tons
1925	384,837	389,136	51,000*	48,000*	.....	.....
1926	411,900	366,140	72,510*	52,019*	.....	.....
1927	426,258	370,915	100,130*	47,939*	63,207*	25,868*
1928						
January	46,200	34,403	110,114	41,256	66,285	25,868
February	29,445	33,703	108,955	43,316	62,500	22,867
March	40,894	35,688	114,061	39,324	61,000	20,538
April	37,240	32,779	113,800	33,986	55,000	16,946
May	32,883	37,333	105,356	34,374	43,716	17,687
June	25,792	37,676	90,189	40,000	35,248††	18,207
July (est.)	28,000	38,000	80,000	40,000	.....	.....

*December 31.

††July 21.

The 1928 figures, unless otherwise specified, are all as of the first of each month.

Rubber at Folies Bergère, Paris

Novel uses for rubber are often devised in the most unexpected quarters. Now it is a new dance featured at the Folies Bergère and known as the "bubble dance," which owes a great deal of its successful appeal to the fact that numbers of natural-colored rubber balloons are effectively employed. The star dancer makes them float and glide, soar and dive and do a variety of other stunts in mid-air, while a supporting chorus blows balloon bubbles from huge pipes. The turn has been received with acclaim in Paris and London.

CRUDE RUBBER EXPORTS FROM NETHERLANDS EAST INDIES, during the month of May, were as follows: Java and Madura, 4,943 long tons; Sumatra East Coast, 5,355 long tons; other Netherlands East Indies, 10,382 long tons, totaling 20,680 long tons.

Dominion of Canada Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	March, 1928 Pounds	March, 1928 Value	Twelve Months Ended March, 1928 Pounds	Twelve Months Ended March, 1928 Value
UNMANUFACTURED				
Rubber, gutta percha, etc.	6,695,967	$2,056,201	58,062,095	$21,337,146
Rubber recovered	1,525,065	126,201	10,218,666	873,243
Rubber, powdered and rubber gutta percha scrap	1,515,978	67,530	9,131,793	497,792
Balata	593	273	16,177	7,645
Rubber substitutes	62,484	11,517	859,940	133,614
Totals	9,800,087	$2,261,722	78,288,671	$22,849,440
PARTLY MANUFACTURED				
Hard rubber sheets and rods	25,950	$10,601	206,069	$90,121
Hard rubber tubes	.....	2,311	.....	13,660
Rubber thread not covered	30,684	36,565	237,023	298,053
Totals	56,634	$49,477	443,092	$401,834
MANUFACTURED				
Belting	.....	$28,439	.....	$154,853
Hose	.....	29,335	.....	184,349
Packing	.....	7,065	.....	54,998
Boots and shoes, *pairs*	9,743	15,943	122,285	217,073
Clothing, including waterproofed	.....	79,641	.....	529,986
Gloves	.....	1,168	.....	17,766
Hot water bottles	.....	2,847	.....	26,096
Tires, solid, *number*	40	3,098	444	25,120
Tires, pneumatic, *number*	5,742	26,934	43,010	276,311
Tires, tubes, *number*	5,055	7,986	45,795	88,580
Elastic, round and flat	.....	4,499	.....	170,061
Mats and matting	.....	10,324	.....	45,271
Cement	.....	17,719	.....	91,943
Golf balls, *dozen*	4,652	15,268	43,476	171,012
Heels, rubber, *pairs*	163,796	12,323	1,159,447	74,785
Other rubber manufactures	.....	170,050	.....	1,291,586
Totals	.....	$432,639	.....	$3,419,790
Totals, rubber imports	.....	$2,743,838	.....	$26,671,064

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
UNMANUFACTURED				
Waste rubber	$13,883	.....	$281,389	.....
Totals	$13,883	.....	$281,389	.....
MANUFACTURED				
Belting	$45,049	.....	$495,013	.....
Canvas shoes with rubber soles	653,346	.....	4,140,025	.....
Boots and shoes	196,301	.....	2,207,997	.....
Clothing, including waterproofed	838	.....	21,747	.....
Hose	22,007	.....	250,325	.....
Tires, casings	2,039,254	.....	16,776,082	.....
Inner tubes	298,684	.....	3,075,103	.....
Solid	49,306	.....	423,152	.....
Other rubber manufactures	146,257	$5,189	955,118	$70,308
Totals	$3,451,042	$5,189	$28,344,562	$70,308
Totals, rubber exports	$3,464,925	$5,189	$28,625,951	$70,308

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, Malaya House, 57 Charing Cross, London S. W. 1, England, states that the amount of rubber exported from British Malaya in June last totaled 22,930 tons. The amount of rubber imported was 16,168 tons, of which 13,050 tons were declared as wet rubber. The following are comparative statistics:

	1927 Gross Exports Tons	1927 Foreign Imports Tons	1928 Gross Exports Tons	1928 Foreign Imports Tons
January	34,946	14,995	27,731	16,618
February	27,528	11,697	28,813	12,991
March	41,346	17,462	27,813	10,508
April	29,041	13,069	20,029	9,335
May	31,393	15,491	26,403	10,350
June	32,607	14,706	22,930	16,168
Totals	196,861	87,420	153,719	75,890

The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of May and June, 1928:

	May, 1928 Tons	June, 1928 Tons
United Kingdom	5,249	2,947
United States	16,450	15,617
Continent of Europe	1,960	1,815
British Possessions	323	515
Japan	2,336	2,003
Other foreign countries	35	33
Totals	26,403	22,930

United States Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	April, 1928		Four Months Ended April, 1928	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	85,024,979	$27,296,346	339,174,470	$117,447,821
Balata	106,145	32,924	311,766	115,767
Jelutong or Pontianak	1,327,077	174,970	5,403,366	889,912
Gutta percha	152,754	27,627	1,444,930	387,247
Guayule	1,147,552	312,131	4,499,852	1,201,692
Rubber scrap	1,511,164	66,076	7,665,644	314,560
Totals	89,269,671	$27,910,074	358,500,028	$120,356,999
Chicle *dutiable*	1,829,754	$914,166	7,265,311	$3,687,706
MANUFACTURED—*Dutiable*				
Rubber belting	47,373	$28,506	177,598	$102,225
Rubber tires	906	18,809	1,882	46,935
Other manufactures of rubber	.....	153,422	.....	545,920
Totals	48,279	$200,737	179,480	$695,080

EXPORTS OF FOREIGN MERCHANDISE

RUBBER MANUFACTURES				
Crude rubber	5,089,209	$1,415,024	24,006,160	$7,967,037
Balata	12,146	3,476	91,839	36,645
Gutta percha and rubber substitutes and scrap	.....	.....	112,482	12,281
Rubber manufactures	.....	9,261	.....	91,215
Totals	5,101,355	$1,427,761	24,210,481	$8,107,178

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	1,814,839	$135,847	7,590,403	$573,538
Scrap and old	3,155,943	149,822	15,823,071	917,497
Rubberized piece goods and hospital sheeting *sq. yd.*	176,253	88,314	589,356	299,281
Footwear				
Boots *pairs*	52,042	117,481	253,511	619,536
Shoes *pairs*	94,323	66,727	489,275	395,943
Canvas shoes with rubber soles *pairs*	492,861	340,288	1,748,108	1,282,456
Rubber water bottles and fountain syringes *number*	15,597	9,489	93,305	58,171
Rubber gloves *doz. pairs*	7,238	18,522	28,943	84,745
Other druggists' rubber sundries	.....	25,877	.....	121,646
Rubber balloons *gross*	44,082	53,758	190,998	222,100
Rubber toys and balls	.....	13,956	.....	45,298
Bathing caps *doz.*	22,731	49,168	87,139	188,202
Hard Rubber goods				
Electrical hard rubber goods	122,715	16,967	524,163	104,692
Other hard rubber goods	.....	29,241	.....	115,973
Tires				
Casings, automobile *number*	209,168	2,608,880	812,700	10,438,366
Tubes, automobile *number*	121,642	256,460	537,512	1,144,757
Other casings and tubes *number*	4,970	9,486	18,081	35,936
Solid tires for automobiles and motor trucks *number*	3,644	135,699	18,751	675,208
Others	278,036	65,562	863,100	197,765
Tire accessories	.....	141,061	.....	589,897
Rubber and friction tape	109,866	36,714	432,064	137,295
Belting	324,264	189,386	1,814,230	997,795
Hose	574,041	210,454	2,486,270	886,444
Packing	222,038	98,054	1,037,248	463,887
Soles and heels	144,076	255,024	497,962	787,647
Thread	82,693	92,636	498,872	564,570
Rubber bands and erasers	94,985	69,441	304,138	211,755
Other rubber manufactures	.....	314,876	.....	905,105
Total	.....	$5,599,190	.....	$23,065,505

Crude Rubber Imports by Customs Districts

	*May, 1928		Five Months Ended *May, 1928	
	Pounds	Value	Pounds	Value
Massachusetts	3,590,576	$1,004,448	20,804,011	$6,527,898
New York	59,164,235	15,802,084	345,895,972	115,532,440
Philadelphia	3,910,450	1,413,711	11,540,774	3,826,943
Maryland	1,572,923	444,577	14,963,896	5,187,422
Los Angeles	1,112,633	326,774	12,000,064	4,206,231
San Francisco	109,608	32,646	458,461	142,968
Oregon	170	57	83,150	28,725
Ohio	63,168	18,608	2,445,905	839,137
Wisconsin	.....	.....	280,000	110,749
St. Louis	.....	.....	56,000	21,982
Colorado	44,800	15,767	214,800	81,999
Totals	69,568,563	$19,058,672	408,743,033	$136,506,493

*Including latex, dry rubber content.

SINGAPORE IMPORTED 212 LONG TONS OF RUBBER FROM LABUAN during 1927.

United Kingdom Rubber Statistics

IMPORTS

	May, 1928		Five Months Ended May, 1928	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Crude Rubber				
From—				
Straits Settlements	4,250,300	£155,902	36,675,400	£2,129,604
Federated Malay States	2,242,000	82,252	19,683,500	1,103,665
British India	628,900	25,292	6,544,500	408,596
Ceylon and Dependencies	1,726,600	64,727	12,287,900	746,973
Other Dutch possessions in Indian Seas	1,486,500	58,530	10,784,200	665,700
Dutch East Indies (except other Dutch possessions in Indian Seas)	1,537,900	53,400	12,284,000	728,789
Other countries in East Indies and Pacific not elsewhere specified	324,500	11,385	1,526,900	88,739
Brazil	161,200	6,836	1,944,500	109,956
South and Central America (except Brazil)	5,300	172	136,700	7,321
West Africa				
French West Africa	38,600	1,240	88,800	3,743
Gold Coast	47,400	1,893	252,200	14,351
Other parts of West Africa	197,800	7,962	872,100	47,486
East Africa, including Madagascar	50,100	1,817	602,900	35,798
Other countries	162,600	6,225	703,200	35,825
Totals	12,859,700	£477,633	104,386,800	£6,126,546
Waste and reclaimed rubber	450,500	5,655	4,041,100	55,398
Gutta percha and balata	335,900	24,852	1,607,900	135,654
Rubber substitutes	.....	.....	10,900	321
Totals	13,646,100	£508,140	110,046,700	£6,317,919
MANUFACTURED				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£71,707	.....	£347,199
Inner tubes	.....	15,764	.....	68,109
Solid tires	.....	4,770	.....	25,317
Boots and shoes *doz. pairs*	63,118	99,827	354,489	582,841
Other rubber manufactures	.....	138,814	.....	826,716
Totals	.....	£330,882	.....	£1,850,182

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	1,721,100	£14,588	13,156,700	£110,608
Rubber substitutes	34,100	835	207,100	5,377
Totals	1,755,200	£15,423	13,363,800	£115,985
MANUFACTURED				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£223,196	.....	£952,833
Inner tubes	.....	32,737	.....	168,156
Solid tires	.....	20,947	.....	104,070
Boots and shoes *doz. pairs*	26,311	39,138	101,402	155,032
Other rubber manufactures	.....	291,062	.....	1,292,812
Totals	.....	£607,080	.....	£2,672,903

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber				
To—				
Russia	1,333,300	£80,096	4,577,000	£332,613
Sweden, Norway and Denmark	388,200	19,619	1,229,800	84,474
Germany	3,677,400	161,342	18,721,800	1,236,053
Belgium	1,363,900	59,492	4,552,700	292,892
France	3,338,000	135,710	12,761,100	846,769
Spain	319,800	14,736	1,109,700	79,103
Italy	2,046,200	86,729	6,436,300	420,448
Other European countries	605,700	31,647	2,136,500	168,266
United States	11,623,800	614,207	50,833,000	3,390,384
Canada	.....	.....	4,600	571
Other countries	85,900	6,181	590,300	45,451
Totals	24,782,200	£1,209,759	102,952,800	£6,897,024
Waste and reclaimed rubber	12,300	237	102,500	1,825
Gutta percha and balata	59,000	4,045	394,000	33,712
Rubber substitutes	2,600	159	3,700	194
Totals	24,856,100	£1,214,200	103,453,000	£6,932,755
MANUFACTURED				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£16,568	.....	£64,543
Inner tubes	.....	1,829	.....	16,676
Solid tires	.....	471	.....	1,676
Boots and shoes *doz. pairs*	2,549	3,179	5,524	10,016
Other rubber manufactures	.....	9,623	.....	62,715
Totals	.....	£31,670	.....	£155,626

*After April 12, 1927, tires and tubes imported or exported with complete vehicles or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts and accessories, liable to duty from September 29, 1915, until August 1, 1924, inclusive, and after July 1, 1925, Commercial vehicles, parts and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

‡Tires and tubes included prior to April 12, 1927.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

JUNE 15. By "Pres. Harrison," Far East.

	CASES
N. Diamond & Co., Inc.	50
Hood Rubber Co.	*102

JUNE 15. By "Unicoi," Far East.

Bierrie & Co., Inc.	105
Hood Rubber Co.	85

JUNE 16. By "Mahronda," Far East.

Baird Rubber & Trading Co., Inc.	400
General Rubber Co.	1,398
Littlejohn & Co., Inc.	134

JUNE 16. By "Silverhazel," Far East.

H. A. Astlett & Co.	1,686
Baird Rubber & Trading Co., Inc.	100
Bierrie & Co., Inc.	75
General Rubber Co.	4,216
Hood Rubber Co.	102
The Meyer & Brown Corp.	946
Raw Products Co.	275
Rogers Brown & Crocker Bros., Inc.	1,143
Charles T. Wilson Co., Inc.	776

JUNE 16. By "Victoria Maru," Europe.

H. A. Astlett & Co.	44
Littlejohn & Co., Inc.	680

JUNE 18. By "American Farmer," London.

Bierrie & Co., Inc.	253
The Meyer & Brown Corp.	516

JUNE 18. By "Baltic," Liverpool.

General Rubber Co.	243

JUNE 18. By "Birchbank," Far East.

General Rubber Co.	500
Littlejohn & Co., Inc.	805
The Meyer & Brown Corp.	*255
The Meyer & Brown Corp.	*150
H. Muehlstein & Co., Inc.	140
Rogers Brown & Crocker Bros., Inc.	40

JUNE 18. By "Carmania," London.

H. A. Astlett & Co.	116
General Rubber Co.	295
Littlejohn & Co., Inc.	50
The Meyer & Brown Corp.	70

JUNE 18. By "Minnesota," London.

H. A. Astlett & Co.	905
Baird Rubber & Trading Co., Inc.	512
Bierrie & Co., Inc.	523
Littlejohn & Co., Inc.	171
The Meyer & Brown Corp.	733
H. Muehlstein & Co., Inc.	136
Charles T. Wilson Co., Inc.	38

JUNE 18. By "Pres. Grant," Far East.

Littlejohn & Co., Inc.	532

JUNE 18. By "Silverspruce," Far East.

Littlejohn & Co., Inc.	250
The Meyer & Brown Corp.	†100

JUNE 19. By "Scythia," Liverpool.

Baird Rubber & Trading Co., Inc.	68
Bierrie & Co., Inc.	71

JUNE 21. By "Reliance," Europe.

Littlejohn & Co., Inc.	70

JUNE 23. By "City of Dunkirk," Far East.

H. A. Astlett & Co.	1,330
Baird Rubber & Trading Co., Inc.	850
N. Diamond & Co., Inc.	50
General Rubber Co.	1,463
Haldane & Co., Inc.	300
Hood Rubber Co.	536
Littlejohn & Co., Inc.	1,223
The Meyer & Brown Corp.	1,130
The Meyer & Brown Corp.	*50
H. Muehlstein & Co., Inc.	300
Poel & Kelly, Inc.	260
Raw Products Co.	10
Rogers Brown & Crocker Bros., Inc.	1,076
Charles T. Wilson Co., Inc.	200

JUNE 24. By "Carinthia," Liverpool.

Baird Rubber & Trading Co., Inc.	1,680

JUNE 25. By "American Merchant," London.

Baird Rubber & Trading Co., Inc.	2,098

JUNE 25. By "Minnetonka," London.

H. A. Astlett & Co.	153
Baird Rubber & Trading Co., Inc.	3,209
Bierrie & Co., Inc.	1,201
General Rubber Co.	467
The Meyer & Brown Corp.	1,281
H. Muehlstein & Co., Inc.	274

*Arrived at Boston.
†Arrived at Los Angeles.

JUNE 25. By "Pres. Monroe," Far East.

	CASES
H. A. Astlett & Co.	600
Baird Rubber & Trading Co., Inc.	200
Bierrie & Co., Inc.	375
General Rubber Co.	1,854
Haldane & Co., Inc.	150
Littlejohn & Co., Inc.	3,413
The Meyer & Brown Corp.	1,063
H. Muehlstein & Co., Inc.	270
Poel & Kelly, Inc.	300
Rogers Brown & Crocker Bros., Inc.	380
Charles T. Wilson Co., Inc.	420

JUNE 25. By "Rotterdam," Far East.

The Meyer & Brown Corp.	525
H. Muehlstein & Co., Inc.	264

JUNE 26. By "Toledo," Far East.

H. A. Astlett & Co.	845
Baird Rubber & Trading Co., Inc.	50
Bierrie & Co., Inc.	67
General Rubber Co.	4,504
Littlejohn & Co., Inc.	1,910
The Meyer & Brown Corp.	540
H. Muehlstein & Co., Inc.	1,664
Poel & Kelly, Inc.	400
Poel & Kelly, Inc.	*100
Rogers Brown & Crocker Bros., Inc.	220
Rogers Brown & Crocker Bros., Inc.	*300
Charles T. Wilson Co., Inc.	1,658

JUNE 27. By "Norwegian," Europe.

Littlejohn & Co., Inc.	72

JUNE 27. By "Pres. Cleveland," Far East.

General Rubber Co.	†450
Littlejohn & Co., Inc.	49
H. Muehlstein & Co., Inc.	†250

JUNE 28. By "Tugela," Far East.

H. A. Astlett & Co.	300
Baird Rubber & Trading Co., Inc.	275
General Rubber Co.	1,419
Littlejohn & Co., Inc.	945
The Meyer & Brown Corp.	1,995
The Meyer & Brown Corp.	*100
H. Muehlstein & Co., Inc.	510
Raw Products Co.	476
Rogers Brown & Crocker Bros., Inc.	68
Rogers Brown & Crocker Bros., Inc.	*300
Charles T. Wilson Co., Inc.	1,000

JULY 2. By "American Trader," London.

Baird Rubber & Trading Co., Inc.	1,307

JULY 2. By "Caronia," London.

General Rubber Co.	1,319
Littlejohn & Co., Inc.	130
The Meyer & Brown Corp.	150
Poel & Kelly, Inc.	22

JULY 2. By "Kasenga," Far East.

General Rubber Co.	70
Littlejohn & Co., Inc.	1,524
Charles T. Wilson Co., Inc.	100

JULY 2. By "Minnekahda," London.

Baird Rubber & Trading Co., Inc.	1,868
Bierrie & Co., Inc.	792
Littlejohn & Co., Inc.	184
The Meyer & Brown Corp.	699

JULY 3. By "Sembilan," Far East.

H. A. Astlett & Co.	768
Baird Rubber & Trading Co., Inc.	102
Bierrie & Co., Inc.	311
General Rubber Co.	4,756
Hood Rubber Co.	*824
Littlejohn & Co., Inc.	808
H. Muehlstein & Co., Inc.	210
Poel & Kelly, Inc.	51
Raw Products Co.	102
Charles T. Wilson Co., Inc.	305

JULY 5. By "Machaon," Far East.

H. A. Astlett & Co.	1,884
Baird Rubber & Trading Co., Inc.	126
Bierrie & Co., Inc.	210
General Rubber Co.	3,862
Haldane & Co., Inc.	168
Hood Rubber Co.	*354
Littlejohn & Co., Inc.	5,627
The Meyer & Brown Corp.	2,500
The Meyer & Brown Corp.	*51
H. Muehlstein & Co., Inc.	720
Poel & Kelly, Inc.	1,542
Rogers Brown & Crocker Bros., Inc.	672
Charles T. Wilson Co., Inc.	936

JULY 5. By "Silvercedar," Far East.

General Rubber Co.	†1,320
Littlejohn & Co., Inc.	809
Poel & Kelly, Inc.	†200

JULY 6. By "Cuba Maru," Far East.

	CASES
H. A. Astlett & Co.	889
Baird Rubber & Trading Co., Inc.	381
Bierrie & Co., Inc.	100
General Rubber Co.	2,926
Littlejohn & Co., Inc.	1,767
The Meyer & Brown Corp.	458
H. Muehlstein & Co., Inc.	1,350
Poel & Kelly, Inc.	230
Rogers Brown & Crocker Bros., Inc.	304
Charles T. Wilson Co., Inc.	686

JULY 6. By "Maryland," London.

Baird Rubber & Trading Co., Inc.	*207
Littlejohn & Co., Inc.	114

JULY 6. By "Silverash," Far East.

H. A. Astlett & Co.	925
Baird Rubber & Trading Co., Inc.	368
Bierrie & Co., Inc.	156
General Rubber Co.	3,753
Littlejohn & Co., Inc.	3,381
The Meyer & Brown Corp.	1,696
H. Muehlstein & Co., Inc.	350
Poel & Kelly, Inc.	150
Rogers Brown & Crocker Bros., Inc.	189
Charles T. Wilson Co., Inc.	689

JULY 7. By "Makalla," Far East.

H. A. Astlett & Co.	280
Baird Rubber & Trading Co., Inc.	132
General Rubber Co.	597
Haldane & Co., Inc.	168
Hood Rubber Co.	*100
The Meyer & Brown Corp.	796
The Meyer & Brown Corp.	*168
H. Muehlstein & Co., Inc.	260
Charles T. Wilson Co., Inc.	291

JULY 9. By "American Shipper," London.

Baird Rubber & Trading Co., Inc.	2,291

JULY 9. By "Blydendyk," Far East.

Hood Rubber Co.	*106

JULY 9. By "Deutschland," Far East.

N. Diamond & Co., Inc.	100

JULY 9. By "Minnewaska," London.

Baird Rubber & Trading Co., Inc.	1,510
Bierrie & Co., Inc.	1,138
The Meyer & Brown Corp.	867

JULY 9. By "Pres. Wilson," Far East.

H. A. Astlett & Co.	725
Baird Rubber & Trading Co., Inc.	150
Bierrie & Co., Inc.	200
General Rubber Co.	896
Haldane & Co., Inc.	500
Littlejohn & Co., Inc.	1,617
The Meyer & Brown Corp.	715
The Meyer & Brown Corp.	*250
H. Muehlstein & Co., Inc.	110
Poel & Kelly, Inc.	300
Poel & Kelly, Inc.	*710
Rogers Brown & Crocker Bros., Inc.	150
Charles T. Wilson Co., Inc.	813

JULY 9. By "Steel Navigator," Far East.

H. A. Astlett & Co.	1,023
Baird Rubber & Trading Co., Inc.	50
Bierrie & Co., Inc.	300
General Rubber Co.	4,048
Hood Rubber Co.	131
Littlejohn & Co., Inc.	1,228
The Meyer & Brown Corp.	525
H. Muehlstein & Co., Inc.	125
Poel & Kelly, Inc.	150
Rogers Brown & Crocker Bros., Inc.	612
Charles T. Wilson Co., Inc.	100

JULY 10. By "Pres. Lincoln," Far East.

H. Muehlstein & Co., Inc.	†250

JULY 10. By "Silverguava," Far East.

Baird Rubber & Trading Co., Inc.	50
Bierrie & Co., Inc.	250
General Rubber Co.	1,888
Haldane & Co., Inc.	136
Littlejohn & Co., Inc.	3,432
The Meyer & Brown Corp.	1,780
The Meyer & Brown Corp.	*120
H. Muehlstein & Co., Inc.	250
Rogers Brown & Crocker Bros., Inc.	211
Charles T. Wilson Co., Inc.	100

JULY 10. By "Tengo Maru," Far East.

H. Muehlstein & Co., Inc.	†102

JULY 12. By "Javanese Prince," Far East.

Baird Rubber & Trading Co., Inc.	250
Bierrie & Co., Inc.	50
General Rubber Co.	2,016
Haldane & Co., Inc.	430
Littlejohn & Co., Inc.	2,246
The Meyer & Brown Corp.	590
Poel & Kelly, Inc.	320
Rogers Brown & Crocker Bros., Inc.	1,100
Charles T. Wilson Co., Inc.	1,950

	Cases
JULY 12. By "Toronto," Far East.	
Baird Rubber & Trading Co., Inc.	50
Bierrie & Co., Inc.	100
General Rubber Co.	50
Haldane & Co., Inc.	250
Littlejohn & Co., Inc.	4,130
The Meyer & Brown Corp.	1,001
H. Muehlstein & Co., Inc.	425
Pool & Kelly, Inc.	150
Rogers Brown & Crocker Bros., Inc.	50
Charles T. Wilson Co., Inc.	600
JULY 15. By "Olivebank," Far East.	
Littlejohn & Co., Inc.	4,478
Charles T. Wilson Co., Inc.	199

Africans

	Cases
JUNE 16. By "Victoria Maru," Europe.	
Littlejohn & Co., Inc.	410
JUNE 19. By "Sacandaga," Far East.	
Hood Rubber Co. bags	*553
JUNE 22. By "Chicago," Europe.	
Littlejohn & Co., Inc.	12
JUNE 26. By "Mercier," Far East.	
N. Diamond & Co., Inc. bales	60

Balata

	Cases
JUNE 26. By "Sheridan," Brazil.	
Paul Bertuch & Co., Inc.	64
JULY 9. By "Cuthbert," Brazil.	
Paul Bertuch & Co., Inc.	32

Guayule

	Cases
JUNE 20. By "Stal," Mexico.	
Continental Rubber Co. of New York..	1,060
JUNE 26. By "Cauto," Mexico.	
Continental Rubber Co. of New York....	4,431
JULY 5. By "Kotonia," Mexico.	
Continental Rubber Co. of New York..	1,060
JULY 11. By "Panuco," Mexico.	
Continental Rubber Co. of New York....	1,951

Rubber Latex

	Cases
JUNE 16. By "Silverhazel," Far East.	
General Rubber Co.	63,334
JULY 9. By "Pres. Wilson," Far East.	
General Rubber Co.	28,760

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
JUNE 25. By "Bangu," Brazil.					
General Rubber Co.	178	6	14	...	...
JUNE 26. By "Sheridan," Brazil.					
H. A. Astlett & Co.	62	...	1	165	...
General Rubber Co.	739	37	186	...	...
Littlejohn & Co., Inc.	508	13	74	109	...
JULY 3. By "American Legion," Bolivia.					
Paul Bertuch & Co., Inc.	102	...	34	...	...
JULY 9. By "Barreado," Brazil.					
Paul Bertuch & Co., Inc.	146	...	...	...	...
General Rubber Co.	91	10	21	...	...
JULY 10. By "Cuthbert," Brazil.					
General Rubber Co.	...	14	39	92	...
Littlejohn & Co., Inc.	258	12	46	164	...

United States Crude and Waste Rubber Imports for 1928 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1928	Total 1927	Balata	Miscellaneous	Waste
January ...tons	43,668	1,580	433	126	435	1	46,243	45,827	120	1,292	248
February	27,852	756	125	125	587	..	29,445	27,701	58	517	310
March	37,545	2,430	72	92	755	..	40,894	35,054	154	741	830
April	36,108	573	15	20	524	..	37,240	48,632	202	888	18
May	31,564	849	14	5	451	..	32,883	36,285	71	923	142
June	24,752	582	25	9	424	..	25,792	33,142	14	727	165
Total, six months, 1928 ...tons	201,489	6,770	684	377	3,176	1	212,497	.....	619	5,088	1,713
Total, six months, 1927 ...tons	212,108	9,973	1,359	699	2,488	14	.....	226,641	569	6,601	3,848

Compiled from statistics supplied by the Rubber Association of America, Inc.

World Rubber Production—Net Exports

Long Tons 1928

	Jan.	Feb.	March	April	May	June
British Malaya:						
Gross exports	27,731	28,813	27,813	20,029	26,403	22,930
Imports	16,618	12,911	10,508	9,335	10,350	16,168
Net	11,113	15,902	17,305	10,694	16,053	6,762
Ceylon	4,352	4,353	3,460	3,460	3,125	.....
India and Burma	1,605	1,081	775	789	.....	.....
Sarawak	842	667	645	630	842	.....
B. N. Borneo	*500	*500	*500	*500	*500	*500
Siam	525	536	269	258	241	.....
Java and Madura	4,831	4,052	3,999	3,993	4,943	.....
Sumatra East Coast	7,988	6,757	5,826	5,040	5,355	.....
Other N. E. Indies	11,360	8,635	9,690	5,538	10,382	.....
French Indo-China	720	723	613	518	619	.....
Amazon Valley	2,273	1,612	2,750	1,014	2,062	1,399
Other America	225	199	204	.....	.....	.....
Mexican Guayule	432	489	575	512	452	.....
Africa	368	588	432	.....	.....	.....
Total	47,154	46,094	47,043	.....	.....	.....

*Estimated.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Absorption—Net Imports

Long Tons 1928

	Jan.	Feb.	March	April	May
Australia	802	616	918	832	655
Belgium	589	599	816	575	.....
Canada	2,290	2,553	2,989	1,938	2,180
Czechoslovakia	376	297	398	159	.....
Denmark	29	43	33	23	61
Finland	78	48	78	63	71
France	1,764	2,526	1,902	2,204	.....
Germany	2,485	2,984	3,521	2,719	2,944
Italy	760	437	763	1,115	.....
Japan	1,361	1,258	1,707	2,353	.....
Netherlands	52	98	95	280	209
Norway	65	67	56	60	.....
Russia	995	159	1,468	926	.....
Spain	335	296	497	.....	.....
Sweden	89	148	184	193	.....
United Kingdom	1,921	3,143	*3,179	2,280	5,325
United States	37,120	30,926	36,970	35,686	28,659
United States (Guayule)	432	489	575	512	452
Total	51,543	46,687	56,149	.....	.....

*Excess of Reexports over Imports.
Compiled by Rubber Division Department of Commerce, Washington, D. C.

London Stocks, May, 1928

London	Landed for May Tons	Delivered for May Tons	Stocked May 31 1928 Tons	1927 Tons	1926 Tons
Plantation	5,354	14,167	44,472	66,990	20,199
Other grades	32	31	89	125	127
Liverpool					
Plantation	†235	†466	†2,254	†2,930	†1,081
Total tons, London and Liverpool	5,621	14,664	46,815	70,045	21,407

† Official returns from the six recognized public warehouses.

Plantation Rubber Exports from Malaya

January 1 to April 30, 1928

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	1,674.69	2,188.91	1,712.30
British Possessions	1,206.77	115.00	90.00
Continent of Europe	2,772.80	461.67	903.11
United States	49,755.35	8,693.49	2,236.09
Japan	5,007.00	714.50	660.00
Other countries	63.83	.....	.....
Totals	60,480.44	12,173.57	5,601.50

*Excluding all foreign transhipment.

Rubber Thread Making

The standard method of manufacture of rubber tape or thread used for winding golf balls, making elastic webbing, etc., consists briefly in water curing a calendered sheet of pure gum rubber and sulphur wound upon a drum, following which the cured sheet, coated with shellac, is rewound on a cutting drum where it consolidates ready for lathe cutting into strips or threads of desired width. The cut strips are separated by boiling in a bath of caustic soda which frees them from adhering shellac.

Following this treatment the cut material is dried and packed in hanks or wound on bobbins for use.[1]

An interesting new method has been recently patented in England providing a simplified process for making elastic strips and threads. In outline the process proceeds by the following steps: Unvulcanized pure gum sheet rubber is calendered directly upon a smooth ductile metallic base.

The arrangement of the calender is represented in Figure 1. The gum batch is fed at A. As the sheet gum passes around the middle roll a set of spaced circular knife cutters B is pressed against it to trim the sheet to desired width before it is applied to a sheet of tin foil entering the calender from the roll C. On the opposite side of the calender the united rubber and foil sheets are rolled up in a roll D. In this condition the sheet is bound with a fabric wrapper for vulcanization which is accomplished in the usual vulcanizing chamber.

Following this the fabric wrapper is removed and the roll of combined sheet mounted as indicated in Figure 2 at A. As the coil is unwound it is led under the roll B with its metal face against the roll surface. The roller B is mounted and revolves in a tank of water C close to a series of spaced cutters D which cut the rubber into narrow strips as the sheet passes on the tin foil over roller B. The water acts as a lubricant for the cutting operation. The cutters are so arranged as to cut through the rubber sheet, but not into the surface of the tin foil.

The vulcanization of the rubber sheet in contact with the surface of the tin foil to which it is applied by the calender rolls causes it to adhere sufficiently to the surface of the foil so that it can be accurately cut in the manner described. After passing the cutters each strip is separated from the tin foil and wound on to a separate bobbin E, the tin foil

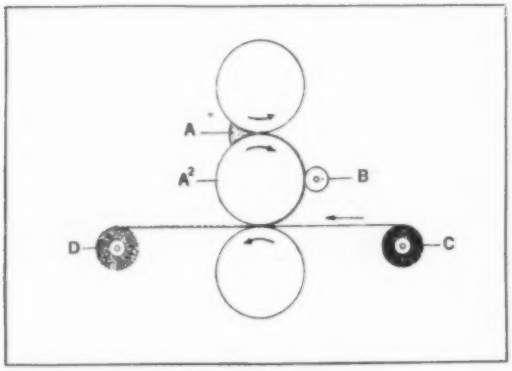


Fig. 1. Calendering Rubber and Sheet Metal Together

being rewound into a coil F for further use. The number and spacing of the cutters depends on the width of the rubber sheet and the width of the strips, tapes or threads it is desired to produce.

[1] "Golf Ball Tapes and Windings." INDIA RUBBER WORLD, June 1, 1922, pp. 609-610.

Since tin foil is comparatively soft and ductile the edges of the cutters are not seriously damaged by coming into contact with its surface, and any cuts made can easily be removed by a light rerolling of the foil. Further, the low

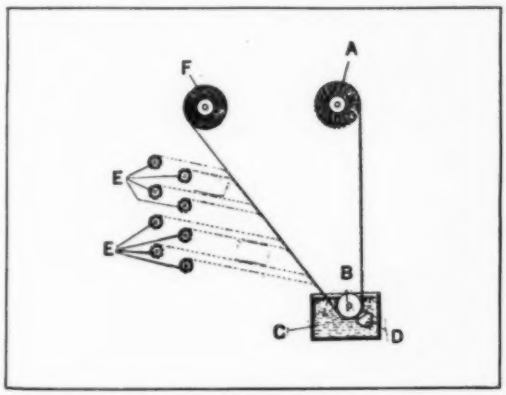


Fig. 2. Cutting and Winding Rubber Strips

melting point of the foil enables any sheets that have become unusuable to be readily melted down and resheeted.

Farmers Should Consider Non-Food Crops

Farmers complaining that foodstuff raising is profitless are urged to consider non-food crops. Bureau of Standards investigators point out the possibly profitable large scale annual cultivation of Texas sunflowers to supplement slower-grown wood to meet the mounting demands of the cellulose-artificial silk industry. Thomas A. Edison sees a big opportunity in raising common goldenrod, and is said to regard it as the most promising of all annual sources of rubber. Then there are the agricultural possibilities occasioned by the mechanized cultivation of guayule following its transformation from a wild and erratic to a tame, easily-raised, and better rubber-bearing shrub. It may seem chimerical now, but some day the United States may be importing wheat and exporting rubber.

Early Rubber History

The first rubber seeds from Brazil were brought to England in 1873 by a Mr. Farris of Cameta, Brazil, at the instance of Mr. James Collins, Curator of the Museum of the Pharmaceutical Society. These seeds, 2,000 in number, were purchased on behalf of the India Office. Only a dozen seeds germinated, and six seedlings were taken to Calcutta, and some of their descendants may exist now in South Burma.

Mr. (now Sir) Henry Wickham collected 70,000 seeds in the Tapajos region in 1876, and took them to England, where 2,397 germinated, of which Ceylon received 2,119, Burma 50, Singapore 50, Jamaica 16, and small lots went to other countries. In June, 1877, 22 plants were received at Singapore in good condition; some were planted in the Botanic Gardens there, some at Perak, and some at Teluk Anson. It is from these 22 plants that three-fourths of the cultivated Hevea trees have been developed. The first tapping experiments in Ceylon were made in 1884, and in Singapore in 1889. The first estate planting in Malaya was in 1895, and after 1898 there was a rapid development of rubber planting in Malaya.

The interesting article relating to patents on watch case vulcanizers is concluded in this issue. Turn to page 58.